

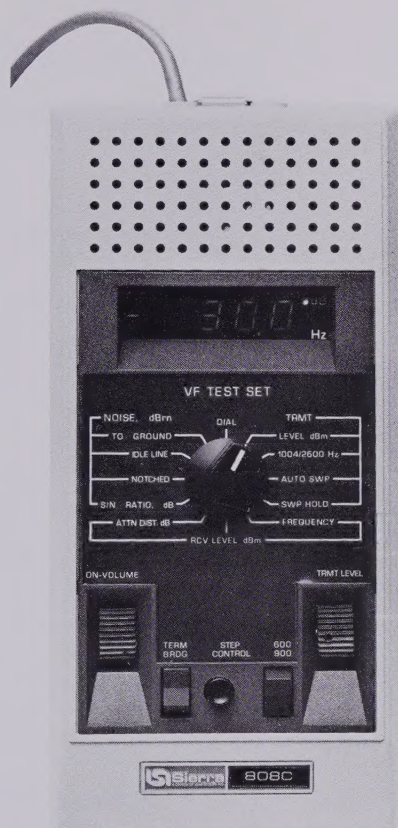
808C

808C-11

808C-12

VOICE FREQUENCY TEST SET

MAINTENANCE MANUAL



LSI/Sierra 808C Voice Frequency Test Set

This Maintenance Manual provides information for service and calibration center use. It is suggested that the instrument be calibrated on an annual basis, depending upon conditions and user requirements.

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1. FUNCTIONAL DESCRIPTION

1.01 The 808C series test set consists of a variable voice frequency (VF) oscillator, a level/noise/frequency meter, an LED display, and an audio frequency monitor, all of which are controlled by a microprocessor central processing unit (CPU). The CPU performs test functions such as controlling measurement ranging, and performing the calculations and conversions necessary for the digital display. The CPU communicates with the analog circuitry via interface modules for function, signal, oscillator, and display. The CPU is also connected to the data bus, as well as the analog-to-digital (A/D) converter and the prescaler. Through the data bus, the CPU has access to its memory storage devices: the read-only memory (ROM) where the computer program instructions are stored, and the random access memory (RAM) which serves as a "scratch pad" to temporarily store test results and calculations. Since the bus is shared by all devices within the microcomputer, the CPU controls the ON/OFF status of each device.

VF SIGNAL GENERATOR/TRANSMITTER

1.02 When the test set is in the AUTO SWP Function Selector switch position, the signal generator produces a swept VF range with an automatic repeat that matches the frequency values found in Table 2-5. A manual interrupt is provided on the test set to hold (SWP HOLD) any particular output frequency, but as soon as the hold is released (AUTO SWP) the next sequential frequency is transmitted and the timed frequency step sequence is resumed. Provision is made on all 808C series models to manually sweep the transmitter frequency at the rate of two frequency tones per second using the STEP CONTROL pushbutton. The digital display provides immediate identification of each frequency step.

1.03 Output level can be adjusted for a specific dBm value with the thumbwheel TRMT LEVEL control, and the digital display. 1004 Hz (800 Hz for 808C-11/C-12) can also be generated continuously for standard level measurement in the LEVEL, dBm position, and as a "holding tone" to lock companders in the "open" mode. Notched noise measurements can then be made with another 808 at the distant end. (Compandor open mode occurs when the tone level being transmitted is the same in all parts of the circuit; i.e., there is neither gain nor loss in any of the companding amplifiers. In many older U.S. circuits, open mode was achieved with a level of -13 dBm.)

In the sweep mode, the 808 generator avoids energy near 2600 Hz to prevent interference with signaling devices which may be on the circuit. Thus the 2604 Hz signal is omitted from the frequency sweep plan. Each frequency is generated for about 5 seconds. In the 1004/2600 Hz position the 808C transmits 1004 Hz after the function is selected, and 2600 Hz when the STEP CONTROL pushbutton is momentarily depressed. The 808C-11 and C-12 models have a similar 800/820/850 Hz position that transmits 800 Hz after the function is selected; it can be stepped to 820, or 850 Hz, by momentarily depressing the STEP CONTROL pushbutton once, or twice, respectively.

LEVELMETER

1.04 Incoming level measurements are displayed in dBm when the 808 is operated in the RCV LEVEL, dBm position. The last level measured during the receive level function is stored when the Function Selector is turned to another position. This stored reference level is compared to the current signal level received when the 808 is operated in the attenuation distortion (ATTN DIST, dB) position, and then the relative attenuation is displayed. This feature is typically used in conjunction with a distant 808, generating tones via the auto sweep function. Frequency and relative level are alternately displayed. In this manner attenuation distortion can be quickly read, and recorded if desired.

FREQUENCY METER (Counter)

1.05 A frequency counter senses the analog signal's frequency (transmitted or received) and transmits this information digitally to the CPU and the LED display via the data bus. Provision is made to audibly monitor the transmitted and received frequencies via a built-in speaker with an adjustable volume control.

SIGNAL-TO-NOISE

1.06 In the S/N RATIO, dB position, the set measures signal-to-noise ratio by first measuring the received test tone level at 1004 Hz (808C) or 800 Hz (808C-11/C-12) and then measuring circuit noise with the test tone notched out. The test tone is passed through a low pass 10 kHz filter and into the level detector (average/true RMS) via multiplexers. The signal level is determined and stored in RAM via the A/D (analog-to-digital) converter and the data bus. To measure circuit noise level, the received signal is first passed through a notch filter to filter out the holding tone. Then the noise level is measured by the level detector circuits and stored in RAM. The values are processed and calculated by the microprocessor and the results are displayed on the digital display in dB units. Selection of the signal-to-noise function automatically implies that measurements are made using the C-Message filter for the 808C or the psophometric filter for the 808C-11 and C-12 models. Signal-to-noise measurements can also be made using the 3 kHz flat filter by momentarily depressing the STEP CONTROL pushbutton while in the signal-to-noise function.

NOISE METER

1.07 In the IDLE LINE noise position, idle circuit (terminated) noise is measured through the C-Message (808C) or psophometric (808C-11 and C-12) filter, and shown on the digital display. (Other test tones and notches are absent in the IDLE LINE position.) When the Function Selector is set to the NOTCHED position, notched circuit (terminated) noise is measured through the C-Message (808C) or psophometric (808C-11 and C-12) filter and the incoming test tone is removed using the notch filter. In the TO GROUND position, common mode noise-to-ground is measured using the C-Message (808C) or the psophometric (808C-11 and C-12) filter. All the noise measurements above can be made using the 3 kHz flat filter by rotating the Function Selector to the desired mode and then momentarily depressing the STEP CONTROL pushbutton.

A/D CONVERTER

1.08 The A/D converter's function is to change the analog signal's input level and noise to a sequence of binary number codes or "digital words" representing the original values. The digital words are then sent to the CPU and the LED display via the data bus.

INTERFACE MODULES

1.09 The function interface senses which of the 12 positions of the function switch is selected. It also senses the input impedance and whether or not the STEP CONTROL pushbutton is depressed. After gathering all this information, the function interface converts it to binary code and sends this data to the CPU via the data bus.

1.10 The signal control interface converts the digital words from the CPU into control signals which enable the various multiplexer ports and amplifiers in the receive measurement sections of the test set.

- 1.11 The oscillator interface converts the CPU's digital words into signals to control the various transmit frequencies of the sine wave oscillator.
- 1.12 The display interface contains a decoder that converts the digital words from the bus to codes which light the appropriate segments of the digital display.

BRIDGED/TERMINATED MEASUREMENTS

- 1.13 A switch is provided to select either bridged or terminated mode (BRDG/TERM). Bridging permits measurements on working circuits or in circumstances where the circuit is already terminated. In the terminated mode, the 808 supplies the load for an otherwise open circuit. Another switch selects 600 and 900 ohm terminations for the model 808C, or 150 and 600 ohm terminations for the models 808C-11 and C-12. These termination choices permit more flexible applications of the 808C series test set in central office and direct cable measurements.

SELF-TEST

- 1.14 When the 808 is first turned on, the set automatically performs a number of self-checks and a display indicator test. During the self-test the unit will display +888.8 while the audio output is reverse scanned in accordance with the sweep frequency plan used with each model.

HOLD CIRCUIT

- 1.15 A dial network holding circuit is provided to prevent dropping a dialed-up connection while making tests. To select the holding circuit, rotate the Function Selector to the DIAL position, then depress the STEP CONTROL pushbutton, and note that the most significant decimal point lights. Once the holding circuit has been selected as described above, the operator may disconnect the hand test telephone from the "cuff link" stud terminals and rotate the Function Selector to any test position desired. To cancel the holding function, the selector need only be rotated back to the DIAL position.
(This dial hold circuit should not be confused with the Function Selector position for holding tones, which are used to hold compandors in their open state, or confused with the sweep hold (SWP HOLD) position which just stops the sweep at a particular frequency.)

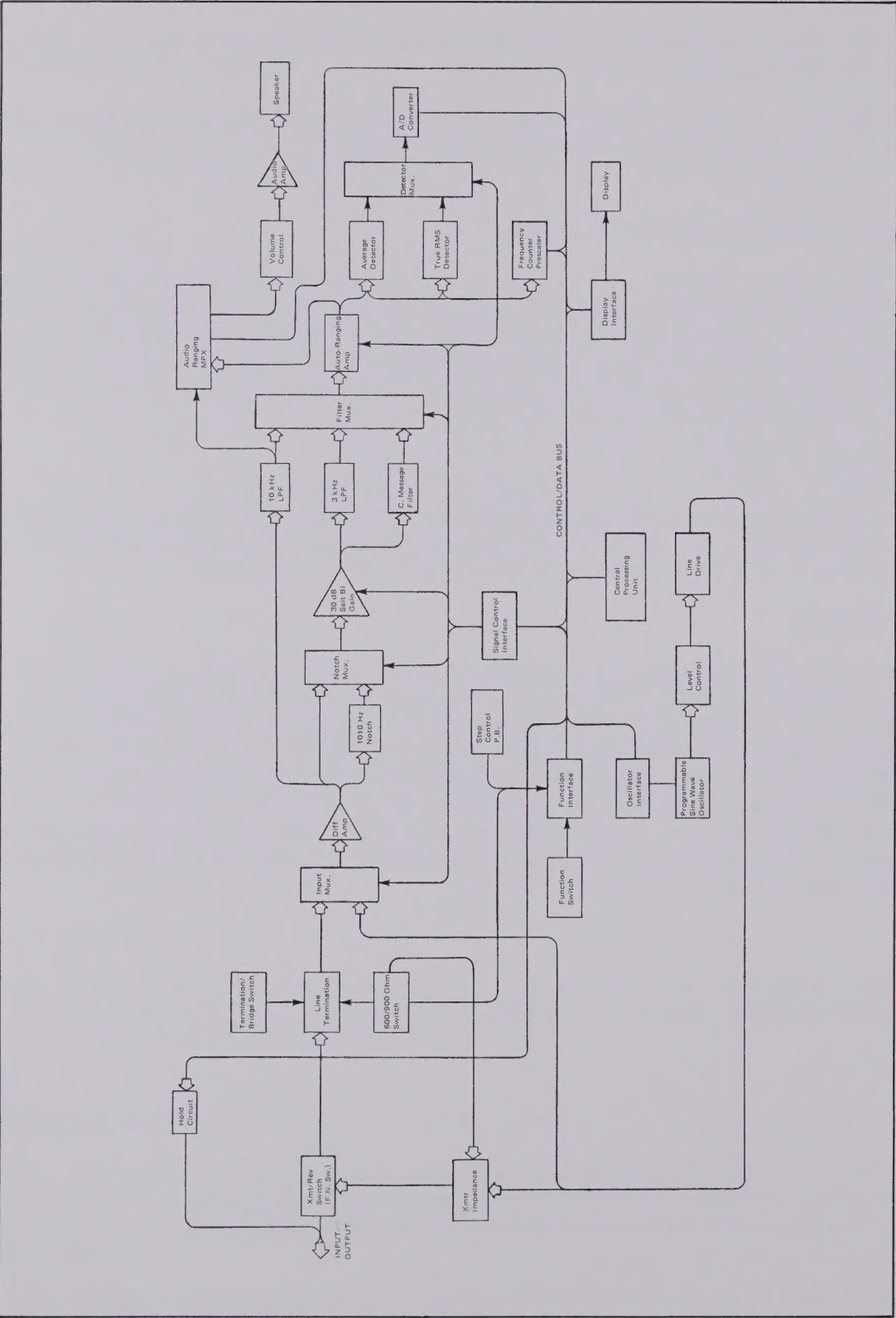


Figure 1-1. Functional Block Diagram

2. CALIBRATION

TEST EQUIPMENT

2.01 Test equipment recommended for maintenance of the Sierra 808C series is listed in Table 2-1. Equivalent instruments, with characteristics equal to or better than those listed, may be used in lieu of the specific models or types recommended.

Table 2-1. RECOMMENDED TEST EQUIPMENT

DESCRIPTION	MANUFACTURER & MODEL OR PART NUMBER	COMMENT
Frequency Synthesizer	Hewlett-Packard 3325A	Note: A 50 ohm output, + 10 dBm signal generator may be used, provided it is monitored by an accurate frequency counter.
Digital Multimeter	Dana 4300	1 Megohm input or greater; 1% accuracy
High Resolution Counter	Fluke 1900A	2 MHz or greater
AC Voltmeter, Digital	Fluke 8920A	1 M ohm input or greater; 200 Hz-4 kHz; linear dB; true RMS
Power Supply	Hewlett-Packard Harrison 6205B	0-50 VDC, 750 mA
Termination Resistor		600 ohm

INTERNAL ACCESS

2.02 For access to internal parts of the 808C, and to various test points on the PCBs, remove the back cover as follows:

- Step 1: Turn the ON-VOLUME control to OFF.
- Step 2: Remove the four captive screws from the battery cover (case back), and remove the cover and battery pack.
- Step 3: Remove the three screws securing the case bottom: two located on the upper battery compartment, and one located at the lower end of the case.
- Step 4: Remove the case back, allowing the battery cables to slide out of the battery compartment. Set the battery pack on a bench, next to the 808C, and connect the battery cables, observing the proper polarity.

RECEIVER TESTS

2.03 Receiver tests should include each of the following functions:

- 1) dial
- 2) noise-to-ground
- 3) idle line
- 4) notched noise
- 5) signal-to-noise ratio
- 6) attenuation distortion
- 7) receive level
- 8) frequency accuracy

DIAL TEST

2.04 The dial test is performed as follows:

- Step 1: Allow the unit to initialize after power is applied.
- Step 2: Position the Function Selector to the DIAL position. The display should indicate a negative sign, and the dB and Hz indicators should be off.
- Step 3: Set an adjustable 0 to 50 VDC supply to 36 VDC and connect its output to the cuff link terminals J7 and J8 of the 808C series instrument (hereafter just 808 when all three models are referenced).
- Step 4: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights.
- Step 5: Measure the holding current drawn by the 808's line holding circuit, using either the lab supply current meter or an ammeter connected in series with J7 or J8. With the lab supply adjusted to 36 V, and the most significant decimal point lit on the 808, the ammeter should indicate equal to or greater than 23 mA, but not more than 40 mA.

PRELIMINARY TEST SET-UP

- 2.05 Before beginning calibration procedures, allow test equipment to warm up for a minimum of 15 minutes.
- Step 1: Connect test equipment in accordance with Figure 2-1, attaching the synthesizer between tip and ring (or "A" and "B") of the 808 test cord termination. (Note that model 808C-11's test cord terminates in a "Siemens" (triple banana) plug, and the 808C-12's test cord is terminated with a crocodile (alligator) ground lead and two expansion-pin-plugs (single banana). For convenience, "A" and "B" designate the pin plugs connected to the balanced line leads in the 808C-11/C-12 Operation Manuals.)
- Step 2: Ensure that the AC voltmeter is calibrated to measure power into a 600 ohm load (where $0 \text{ dBm} = 0.775 \text{ V}_{\text{rms}} = 1 \text{ mW}$ into 600 ohms), or use the proper correction factor.

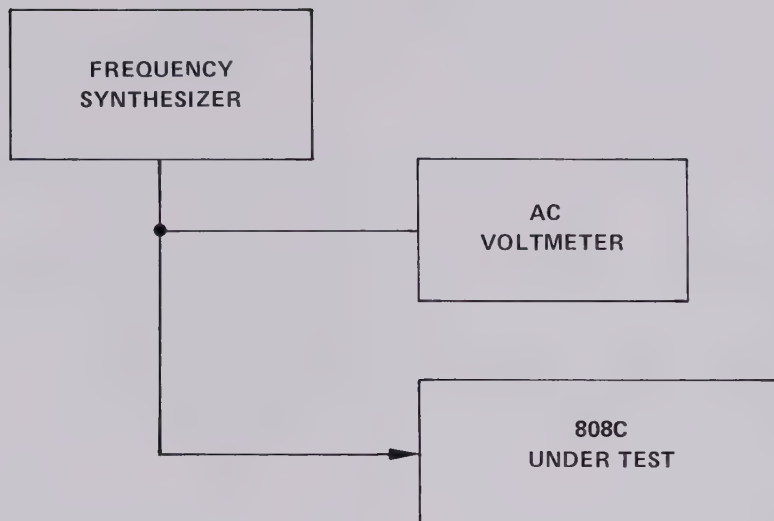


Figure 2-1. Test Set-Up

LEVEL

2.06 Receive Level Measurements are tested as follows:

- Step 1: Position the 808 Function Selector to the RCV LEVEL, dBm position; TERM/BRDG switch to TERM; and 600/900 (or 150/600) switch to 600. Roll the ON-VOLUME control forward to On.
- Step 2: Set the synthesizer output frequency for 1004 Hz for the 808C or 800 Hz for the 808C-11/C-12 and adjust the synthesizer output level to 0.0 dBm on the AC voltmeter.
- Step 3: Adjust A3 R16 until a 0.0 dBm value is obtained, as indicated by the 808 display (display changes from -0.0 to +0.0 or from +0.0 to -0.0)
- Step 4: Set the synthesizer for +9.9 dBm on AC voltmeter. The 808 should display +9.9 dBm $\pm$ 0.2 dB.
- Step 5: Reduce the synthesizer output level in 10 dB steps and ensure that the 808 responds as follows:

AC VOLTMETER INDICATION	808C, 808C-11, 808C-12 DISPLAY
+9.9 dBm	9.9 dBm $\pm$ 0.2 dB
0 dBm	0 dBm $\pm$ 0.1 dB
-10 dBm	-10 dBm $\pm$ 0.1 dB
-20 dBm	-20 dBm $\pm$ 0.1 dB
-30 dBm	-30 dBm $\pm$ 0.2 dB
-40 dBm	-40 dBm $\pm$ 0.2 dB
-50 dBm	-50 dBm $\pm$ 0.3 dB

- Step 6: Reset the frequency synthesizer output level to 0.0 dBm and output frequency to 200 Hz. The 808 should show $0.0 \text{ dBm} \pm 0.2 \text{ dB}$.
- Step 7: Change the synthesizer output frequency to 2 kHz and ensure that the 808 still shows $0.0 \text{ dBm} \pm 0.2 \text{ dBm}$.
- Step 8: Change the synthesizer output frequency to 4 kHz. The 808 should show $0.0 \text{ dBm} \pm 0.2 \text{ dB}$.
- Step 9: Set the synthesizer output frequency to 1004 Hz if the unit under test is an 808C, or 800 Hz if the unit to be tested is an 808C-11 or C-12. For an 808C, the display should drop -1.7 dB when the 600/900 switch is changed to the 900 position. If the unit under test is an 808C-11 or C-12, the display should rise $+6.0 \text{ dB}$ when the 150/600 switch is changed to the 150 position. (Note: These dB-of-change values assume that the synthesizer has a 50 ohm source impedance, terminated only by the 808 unit.)
- Step 10: Return the switch to the 600 position.

ATTENUATION DISTORTION

2.07 Test attenuation distortion measurements as follows:

- Step 1: Turn 808 Function Selector switch to ATTN DIST, dB. The display should momentarily show 1004 Hz for an 808C, or 800 Hz if the unit under test is an 808C-11 or C-12. After briefly displaying frequency, the unit will switch to a display of level, in dB relative to the value stored in memory while the unit was in the RCV LEVEL, dBm position. In this case the unit should display 0.0 dB.
- Step 2: Adjust the synthesizer output to the following levels, and ensure that the 808 display corresponds to the values shown below:

AC VOLTMETER INDICATION	808C, 808C-11, 808C-12 DISPLAY
+ 10 dBm	$-10 \text{ dB} \pm 0.3 \text{ dB}$
- 10 dBm	$+10 \text{ dB} \pm 0.3 \text{ dB}$
- 20 dBm	$+20 \text{ dB} \pm 0.3 \text{ dB}$
- 30 dBm	$+30 \text{ dB} \pm 0.3 \text{ dB}$
- 40 dBm	$+40 \text{ dB} \pm 0.3 \text{ dB}$

- Step 3: Disconnect the synthesizer from the 808 test cord. Display should read 00.
- Step 4: Set the Function Selector to the RCV LEVEL, dBm position. The 808 display should indicate a minus (–) sign with no numerals, indicating that no signal is present at the input.
- Step 5: Set the Function Selector to ATTN DIST, dB position. The 808 display should indicate no numerals and the dB LED indicator should illuminate.

NOTCHED NOISE

2.08 Test notched noise functions as follows:

FOR 808C MODELS

- Step 1: Set the 808C Function Selector to the NOTCHED position; this implies that the C-Message and notch filters are selected.
- Step 2: Adjust frequency synthesizer to 0.0 dBm output level on the AC voltmeter, and to frequencies shown in Table 2-2A. If the 808C displays the corresponding levels, proceed to paragraph 2.09. If the 808C does not display the expected levels, complete Steps 3, 4, and 5. (Note: The values shown in dBrn will be dBrnC (notched), during actual noise measurements with C-Notch weighting.)
- Step 3: Set the frequency synthesizer for 1010 Hz and a level of 0.0 dBm as indicated on the AC voltmeter. Adjust A3 R21 for a minimum reading on the 808C display. Adjust the synthesizer frequency to 1000 Hz and adjust A3 R29 for a minimum on the 808C display. Set the synthesizer to 1020 Hz and A3 R25 for a minimum on the 808C display. Verify that the minimum values obtained at 1010 Hz and 1000 Hz have not changed; readjust R21, R25, and R29 on the A3 board, if necessary.
- Step 4: Set the synthesizer frequency to the values given in Table 2-2A, and verify that the level indication on the 808C corresponds to values given in the table. If necessary, perform minor adjustments on R21, R25, and R29 to obtain the best overall response, per Table 2-2A.
- Step 5: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808C. The unit is now configured so that the 3 kHz flat and notch filters are selected. Adjust the frequency synthesizer to a 0.0 dBm output level on the AC voltmeter, and to the frequencies given in Table 2-2B. If the 808C displays the corresponding levels, proceed to paragraph 2.09. If the 808C does not display the expected levels, repeat Steps 3, 4, and 5.

FOR 808C-11 MODELS

- Step 1: Set the 808C-11 Function Selector to the NOTCHED position; this implies that the psophometric and notch filters are selected.
- Step 2: Set the synthesizer to a 0.0 dBm output level on the AC voltmeter, and adjust it to the frequencies in Table 2-2A. The 808C-11 should display the corresponding levels given in Table 2-2A. If the 808C-11 displays the corresponding levels then proceed to paragraph 2.09. If the 808C-11 does not display the expected levels, complete Steps 3, 4, and 5.
- Step 3: Set the frequency synthesizer for 800 Hz and a level of 0.0 dBm as indicated on the AC voltmeter. Adjust A3 R21 for a minimum reading on the 808C-11 display. Change the synthesizer frequency to 790 Hz and adjust A3 R29 for a minimum on the 808C-11 display. Set the synthesizer to 810 Hz and adjust A3 R25 for a minimum value on the 808C-11 display. Verify that the minimum values obtained at 800 Hz and 790 Hz have not changed. Readjust R21, R25, and R29 on the A3 board if necessary.
- Step 4: Set the synthesizer frequency to the values given in Table 2-2A, and verify that the level indication on the 808C-11 corresponds to the values given in the table. If necessary, perform minor adjustments on R21, R25 and R29 to obtain the best overall response, per Table 2-2A.
- Step 5: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808C-11. The unit is now configured so that the 3 kHz flat and notch filters are selected. Adjust the frequency synthesizer to a 0.0 dBm output level on the AC voltmeter, and

to the frequencies given in Table 2-2B. If the 808C-11 displays the corresponding levels, proceed to paragraph 2.09. If the 808C-11 does not display the expected levels, repeat Steps 3, 4, and 5.

FOR 808C-12 MODELS

- Step 1: Set the 808C-12 Function Selector to the NOTCHED position; this implies that the psychometric and notch filters are selected.
- Step 2: Set the synthesizer to a 0.0 dBm output level on the AC voltmeter and adjust the synthesizer to the frequencies in Table 2-2A. The 808C-12 should show the corresponding levels given in Table 2-2A. If the 808C-12 displays the corresponding levels proceed to paragraph 2.09. If the 808C-12 does not display the expected levels, complete Steps 3, 4, and 5.
- Step 3: Set the Frequency Selector for 800 Hz and a level of 0.0 dBm as read on the AC voltmeter. Adjust A3 R21 for a minimum reading on the 808C-12 display. Change the synthesizer frequency to 790 Hz and adjust A3 R29 for a minimum on the 808C-12 display. Set the synthesizer to 810 Hz and adjust A3 R25 for a minimum value on the 808C-12 display. Verify that the minimum values obtained at 810 Hz and 790 Hz have not changed. Readjust R21, R25, and R29 on the A3 board if necessary.
- Step 4: Set the synthesizer frequency to the values given in Table 2-2A, and verify that the level indication on the 808C-12 corresponds to the values given in the table. If necessary, perform minor adjustments on R21, R25 and R29 to obtain the best overall response, per Table 2-2A.
- Step 5: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808C-12. The unit is now configured so that the 3 kHz flat and notch filters are selected. Adjust the frequency synthesizer to a 0.0 dBm output level on the AC voltmeter, and to the frequencies given in Table 2-2B. If the 808C-12 displays the corresponding levels, proceed to paragraph 2.09. If the 808C-12 does not display the expected levels, repeat Steps 3, 4, and 5.

Table 2-2A. WEIGHTED NOISE WITH NOTCH

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBm)	808C-11 (dBm)	808C-12 (dBm)
200	200	200	65.0 ± 2.5	-21.0 ± 2.0	-21.0 ± 2.0
300	300	300	73.5 ± 1.5	-10.6 ± 1.0	-10.6 ± 1.0
400	400	400	78.6 ± 1.5	-6.3 ± 1.0	-6.3 ± 1.0
500	500	500	81.2 ± 2.7	-3.6 ± 1.0	-3.6 ± 1.0
600	600	600	84.0 ± 2.7	-2.0 ± 1.3	-2.0 ± 1.3
700	—	—	86.0 ± 2.7		
—	790	790		-70.0 ± 10	-70.0 ± 10
800	800	800	87.2 ± 2.7	-70.0 ± 10	-70.0 ± 10
—	810	810		-70.0 ± 10	-70.0 ± 10
862	—	—	87.8 ± 2.7		
995	—	—	30.0 ± 10.0		
—	1000	—		$+1.0 \pm 1.3$	
1010	—	—	20.0 ± 10.0		

table continued

Table 2-2A. WEIGHTED NOISE WITH NOTCH (Continued)

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBrn)	808C-11 (dBm)	808C-12 (dBm)
1025	—	1025	30.0 ± 10.0		$+1.0 \pm 1.3$
1182	—	—	88.6 ± 2.7		
—	1200	1200		0.0 ± 1.0	0.0 ± 1.0
1300	1300	1300	88.2 ± 2.7	-0.4 ± 1.0	-0.4 ± 1.0
1500	1500	1500	87.7 ± 2.7	-1.3 ± 1.0	-1.3 ± 1.0
1700	—	—	88.8 ± 1.5		
—	1800	1800		-2.4 ± 1.0	-2.4 ± 1.0
2000	2000	2000	88.7 ± 1.5	-3.0 ± 1.0	-3.0 ± 1.0
2500	2500	2500	88.6 ± 1.5	-4.2 ± 1.0	-4.2 ± 1.0
3000	3000	3000	87.5 ± 1.5	-5.6 ± 1.0	-5.6 ± 1.0
3300	3300	3300	84.8 ± 2.5	-7.1 ± 2.0	-7.1 ± 2.0
3500	3500	3500	82.4 ± 2.5	-8.5 ± 3.0	-8.5 ± 3.0
4000	4000	4000	75.5 ± 3.5	-15.0 ± 3.0	-15.0 ± 3.0
4500	4500	4500	68.5 ± 3.5	-25.0 ± 3.0	-25.0 ± 3.0
5000	5000	5000	61.5 ± 3.5	-36.0 ± 3.0	-36.0 ± 3.0

Table 2-2B. 3 kHz FLAT WITH NOTCH

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBrn)	808C-11 (dBm)	808C-12 (dBm)
40	40	40	87.0 ± 1.0	-3.0 ± 1.0	-3.0 ± 1.0
60	60	60	88.8 ± 0.5	-1.2 ± 0.5	-1.2 ± 0.5
80	80	80	89.3 ± 0.5	-0.7 ± 0.5	-0.7 ± 0.5
100	100	100	89.5 ± 0.2	-0.5 ± 0.2	-0.5 ± 0.2
120	120	120	89.7 ± 0.2	-0.3 ± 0.2	-0.3 ± 0.2
140	140	140	89.8 ± 0.2	-0.2 ± 0.2	-0.2 ± 0.2
160	160	160	89.8 ± 0.2	-0.2 ± 0.2	-0.2 ± 0.2
200	200	200	90.0 ± 0.2	0.0 ± 0.2	0.0 ± 0.2
400	400	400	90.0 ± 0.2	0.0 ± 0.2	0.0 ± 0.2
600	600	600	89.0 ± 1.5	0.0 ± 0.5	0.0 ± 0.5
—	790	790		-70.0 ± 10	-70.0 ± 10
800	800	800	89.0 ± 1.5	-70.0 ± 10	-70.0 ± 10
—	810	810		-70.0 ± 10	-70.0 ± 10
862	—	—	88.5 ± 1.5		
995	—	—	30.0 ± 10.0		
	1000	—		0.0 ± 0.5	
1010	—	—	20.0 ± 10.0		

table continued

Table 2-2B. 3 kHz FLAT WITH NOTCH (Continued)

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBrn)	808C-11 (dBm)	808C-12 (dBm)
1025	—	1025	30.0 ± 10.0		0.0 ± 0.5
1182	—	—	88.5 ± 1.5		
—	1200	1200		0.0 ± 0.2	0.0 ± 0.2
1300	1300	1300	89.0 ± 1.5	0.0 ± 0.2	0.0 ± 0.2
1600	1600	1600	89.0 ± 1.5	0.0 ± 0.5	0.0 ± 0.5
2000	2000	2000	89.0 ± 0.5	-1.0 ± 0.5	-1.0 ± 0.5
3000	3000	3000	87.0 ± 0.5	-3.0 ± 0.5	-3.0 ± 0.5

IDLE LINE

2.09 Test Idle Line Measurements as follows:

- Step 1: Set the 808 Function Selector to the IDLE LINE position; this implies that the noise weighting filter is selected.
- Step 2: Adjust the frequency synthesizer to 0.0 dBm on the AC voltmeter, and to the frequencies shown in Table 2-3A. The 808 should display corresponding levels shown for each frequency in the table.
- Step 3: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808. The unit is now configured so that the 3 kHz filter is selected. Adjust the frequency synthesizer to 0.0 dBm on the AC voltmeter and to the frequencies shown in Table 2-3B. The 808 should display the corresponding levels for each frequency.

Table 2-3A. IDLE LINE FUNCTION WITH NOISE WEIGHTING FILTER SELECTED

Frequency Synthesizer Setting		Level Display on 808 Unit	
808C (Hz)	808C-11/C-12 (Hz)	808C (dBrn)	808C-11/C-12 (dBm)
60	60	34.3 ± 2.0	-57.0 ± 2.0
100	100	47.5 ± 2.0	-41.0 ± 2.0
200	200	64.9 ± 2.0	-21.0 ± 2.0
300	300	73.7 ± 1.0	-10.6 ± 1.0
400	400	78.8 ± 1.0	-6.3 ± 1.0
500	500	82.3 ± 1.0	-3.6 ± 1.0
600	600	85.0 ± 1.0	-2.0 ± 1.0
700	700	87.2 ± 1.0	-0.9 ± 1.0
800	800	88.7 ± 1.0	0.0 ± 0.0
900	900	89.7 ± 1.0	$+0.6 \pm 1.0$
1000	1000	90.0 ± 0.0	$+1.0 \pm 1.0$
1200	1200	89.6 ± 1.0	0.0 ± 1.0

table continued

Table 2-3A. IDLE LINE FUNCTION WITH NOISE WEIGHTING FILTER SELECTED (Continued)

Frequency Synthesizer Setting		Level Display on 808 Unit	
808C (Hz)	808C-11/12 (Hz)	808C (dBrn)	808C-11/12 (dBm)
1300	1300	89.3 ± 1.0	-0.4 ± 1.0
1500	1500	88.8 ± 1.0	-1.3 ± 1.0
1800	1800	88.7 ± 1.0	-2.4 ± 1.0
2000	2000	88.9 ± 1.0	-3.0 ± 1.0
2500	2500	88.9 ± 1.0	-4.2 ± 1.0
2800	2800	88.0 ± 1.0	-5.0 ± 1.0
3000	3000	87.0 ± 2.0	-5.6 ± 1.0
3500	3500	82.9 ± 3.0	-8.5 ± 3.0
4000	4000	75.4 ± 3.0	-15.0 ± 3.0
4500	4500	67.7 ± 3.0	-25.0 ± 3.0
5000	5000	61.3 ± 3.0	-36.0 ± 3.0

Table 2-3B. IDLE LINE FUNCTION WITH 3 kHz FLAT FILTER SELECTED

Frequency Synthesizer Setting	Level Display on 808 Unit	
808C/C-11/C-12 (kHz)	808C (dBrn)	808C-11/C-12 (dBm)
1.0	90 ± 0.2	0.0 ± 0.2
2.0	89.0 ± 0.2	-1.0 ± 0.2
3.0	87.0 ± 0.5	-3.0 ± 0.5

NOISE-TO-GROUND

2.10 Test the Noise-to-Ground function in the following manner:

- Step 1: Connect the ground or common lead of the frequency synthesizer to the sleeve common point (E1) found on the A1 board, or to the sleeve connection of the 808 test cord. Then short tip and ring (or "A" and "B") on the 808 test cord, or short the cuff link terminals J7 and J8 on the A1 board. Connect the remaining (high side) lead of the synthesizer to this shorted point.
- Step 2: Set the Function Selector to the TO GROUND position. Initial selection of the noise-to-ground function implies that the noise weighting filter will be selected.
- Step 3: Adjust the synthesizer output frequency to 1004 Hz if the unit under test is an 808C, or to 800 Hz if the unit to be tested is an 808C-11 or C-12. Set the frequency synthesizer levels on the AC voltmeter as indicated in Table 2-4. The 808 should display corresponding levels within ± 1.5 dB.
- Step 4: Depress the STEP CONTROL pushbutton to select the 3 kHz flat filter and repeat Step 3. To obtain the proper readings indicated in Table 2-4, it may be necessary to operate the 808 on its internal battery. Ground loops between the test equipment and the battery charger can cause erroneous results when the 3 kHz flat filter is used with the noise-to-ground function.

Table 2-4. TEST FOR NOISE-TO-GROUND FUNCTION

AC Voltmeter Indication	Level Display on 808 Unit	
	808C (dBrn)	808C-11/C-12 (dBm)
+ 10	100	+ 10
0	90	0
- 10	80	- 10
- 20	70	- 20

SIGNAL-TO-NOISE RATIO

2.11 Signal-to-Noise Ratio is tested as follows:

- Step 1: Connect the frequency synthesizer between tip and ring (or “A” and “B”) of the 808 test cord, or to the cuff link terminals J7 and J8.
- Step 2: Set the 808 TERM/BRDG switch to TERM, the 600/900 (150/600) switch to 600, and Function Selector to the S/N RATIO, dB position. Initial selection of the S/N function implies that the noise weighting filter will automatically be selected.
- Step 3: Adjust the synthesizer output level to 0.0 dBm on the AC voltmeter. Select an output frequency of 1004 Hz if the unit under test is an 808C, or 810 Hz if the unit to be tested is an 808C-11 or C-12. The unit under test should display $+70 \pm 10$ dB.
- Step 4: Select the 3 kHz flat filter by depressing the STEP CONTROL pushbutton and noting that the most significant decimal point lights. Repeat Step 3, taking care to avoid ground loops by operating the 808 from its internal battery.
- Step 5: Disconnect the synthesizer from tip and ring (or “A” and “B”) of the 808 test cord. The display should indicate 0.0 dB with the Hz LED blinking.

FREQUENCY ACCURACY

2.12 Test the Receiver Frequency as follows:

- Step 1: Set the Function Selector to the FREQUENCY position. The 808 display should show 00 Hz if no signal source is connected.
- Step 2: Connect the frequency synthesizer between tip and ring (or “A” and “B”) of the 808 test cord. Set synthesizer output frequency to 1004 Hz and the output level for 0.0 dBm on the AC voltmeter. The 808 should display 1004 ± 1 Hz.
- Step 3: Vary the synthesizer output frequency from 200 Hz to 4000 Hz. The 808 should display these frequencies within ± 1 Hz.
- Step 4: Adjust the synthesizer to -40 dBm on the AC voltmeter and to the frequencies between 60 Hz and 4000 Hz. The 808 should display these frequencies within ± 1 Hz.

TRANSMITTER TESTS

- 2.13 Transmitter tests include level measurements, holding tone accuracy, and variable oscillator accuracy which are described in the following paragraphs:

LEVEL

- 2.14 Test Transmit Level Measurements as follows:

- Step 1: Set the Function Selector to the LEVEL, dBm position, and set the 600/900 (or 150/600) switch to 600.
- Step 2: Connect the AC voltmeter to tip and ring (or “A” and “B”) of the 808 test cord with a termination of 600 ohms.
- Step 3: Set the TRMT LEVEL thumbwheel control to +10.0 dBm (808C only), 0.0 dBm and -10.0 dBm (all three test sets) as indicated by the AC voltmeter. Note that in each case the 808 display must agree to within ± 0.1 dB. Set the TRMT LEVEL control to -20.0 dBm, -30.0 dBm and -40.0 dBm, as indicated by the AC voltmeter. Note that in each case the display on the 808 must agree to within ± 0.2 dB.
- Step 4: Set the TRMT LEVEL control to 0.0 dBm and vary the ON-VOLUME thumbwheel control from within one to ten feet (0.3 to 3 meters), and volume variations should not affect the 808 display.
- Step 5: Set the TRMT LEVEL control to 0.0 dBm and vary the ON-VOLUME thumbwheel control over its full range. A tone should be audible to the operator from within one to ten feet (0.3 to 3 meters), and volume variations should not affect the 808 display.
- Step 6: Disconnect the AC voltmeter.

HOLDING TONE TRANSMIT ACCURACY

- 2.15 Test holding tone transmit accuracy as follows:

Step 1A: (808C only)

Set the Function Selector to the 1004/2600 Hz position and ensure that the 808C frequency display shows 1004 +3, -2 Hz. Depress the STEP CONTROL pushbutton and ensure that the frequency display shows 2600 +3, -2 Hz. Press the STEP CONTROL pushbutton again and ensure that the display returns to 1004 Hz.

Step 1B: (808C-11/C-12 only)

Set the Function Selector to the 800/820/850 Hz position and ensure that the 808 frequency display shows 800 +3, -2 Hz. Depress the STEP CONTROL pushbutton and ensure that the frequency display shows 820 +3, -2 Hz. Depress the STEP CONTROL pushbutton again and ensure that the display shows 850 +3, -2 Hz. Further operation of the STEP CONTROL pushbutton will continue to loop the unit through these three holding tones.

- Step 2: Vary the TRMT LEVEL control through its entire range. The 808 display should show the selected holding tone frequency, except at the lowermost limits of the TRMT LEVEL control, where the display goes to 00, when the thumbwheel is rolled almost all the way back toward the “LSI Sierra” label.
- Step 3: Connect the frequency counter between tip and ring (or “A” and “B”) of the 808 test cord. The counter should read the selected holding tone to within $+3$, -2 Hz. Adjust the TRMT LEVEL control, if necessary, to obtain a level sufficient to trigger the counter.

VARIABLE OSCILLATOR ACCURACY

2.16 Test the accuracy of the variable oscillator as follows:

- Step 1: Set the Function Selector to the LEVEL, dBm position and adjust the TRMT LEVEL control for an 808 display of -10.0 dBm.
- Step 2: Set the Function Selector to the AUTO SWP position and note that the 808 displays the lowest frequency available from the version under test. Then the 808 will begin sweeping the frequencies listed in Table 2-5 for the particular model being tested, within an accuracy of $+3$, to -2 Hz for each frequency step. Frequency steps should occur at five-second intervals when the unit is in the AUTO SWP position. Set the function switch to the SWP HOLD position, then momentarily depress the STEP CONTROL pushbutton, and note that the display advances to the next frequency listed in Table 2-5. This single-step mode of operation may be used across the entire sweep frequency range of the unit. Now hold down the STEP CONTROL pushbutton and note that the 808 sweeps at 0.5-second intervals until the button is released. The displayed frequency is held at the instant of release.
- Step 3: (808C only)
- While the Function Selector is in the AUTO SWP position, momentarily depress the STEP CONTROL pushbutton. Note that the 808C automatically sweeps through the three frequencies given in Table 2-5 for the 808C short sweep mode.

Table 2-5. AUTO SWEEP FREQUENCIES

Model	Frequencies ($+3$, -2 Hz)
808C (long sweep mode)	304 to 4004 Hz in 100 Hz increments, with 2604 Hz omitted.
808C (short sweep mode)	404, 1004, and 2804 Hz
808C-11	200, 250, 300, 400, 600, 800, 900, 1000, 1400, 1600, 2000, 2400, 2700, 2900, 3000, 3050, 3400, 3600, 3800, 4000, 1004, 1020, and 2040 Hz
808C-12	304, 404, 504, 604, 804, 1004, 1020, 1200, 1404, 1800, 1904, 2004, 2100, 2204, 2400, 2604, 2704, 2804, 2904, 3004, 3254, 3354, 800, 820 and 850 Hz.

- Step 4: Adjust the ON-VOLUME control for a reasonably audible level and set the Function Selector to the AUTO SWP position. Check for the sound level remaining audible over the complete sweep range.

- Step 5: Set the Function Selector to the SWP HOLD position. The 808 should display the selected frequency steadily.
- Step 6: Set the Function Selector to the AUTO SWP position. The 808 should resume frequency sweeping at five-second intervals.
- Step 7: Set the Function Selector to the SWP HOLD position, then back to AUTO SWP. Repeat several times. The 808 should sweep one step upward at approximately a five-second interval after each repeat. (Note: This tests both Function Selector switch and auto/sweep/hold software.)
- Step 8: Disconnect the frequency counter (if connected during paragraph 2.15, Step 5), from tip and ring (or “A” and “B”) of the 808 test cord and connect an AC voltmeter in its place.
- Step 9: Set the Function Selector to the AUTO SWP position, and the 600/900 (or 150/600) switch to 600 ohms. Terminate the 808 with 600 ohms and ensure that the 808 output level (as monitored on the AC voltmeter) remains constant within ± 0.2 dB throughout the sweep range.
- Step 10: Disconnect the AC voltmeter.

SUBASSEMBLIES

2.17 The Display/Selector Board (A1), the CPU Board (A2) and the Signal Board (A3) are tested and calibrated as described in the following sections. Some tests, which may seem redundant, are present to permit mass testing of individual subassemblies.

DISPLAY/SELECTOR BOARD, A1

2.18 Display/Selector Board calibration includes voltage, impedance (termination and bridging) and Function Selector tests as described in the following paragraphs:

VOLTAGE

2.19 The following test is for voltage verification at several points on the A1 board:

- Step 1: Connect the A1 board to the frequency synthesizer and digital multimeter as shown in Figure 2-2.

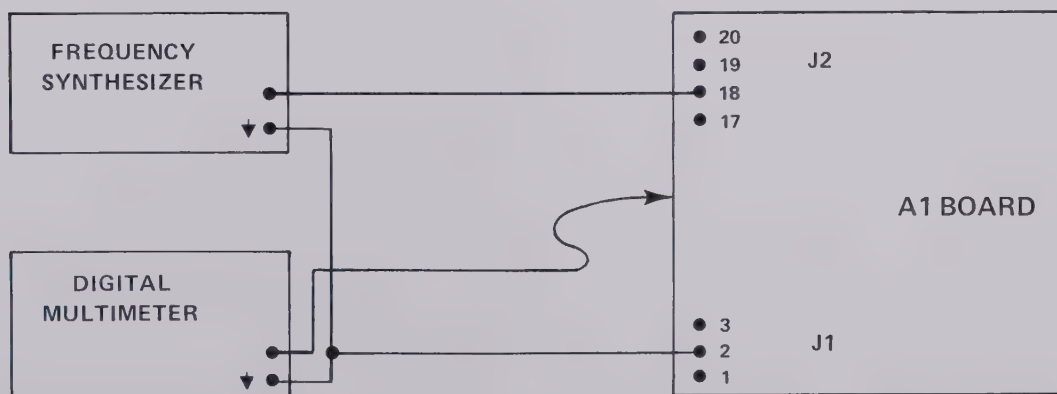


Figure 2-2. Equipment Set-Up

- Step 2: Connect the battery pack harness to J4 and insert the charger plug into J6.
- Step 3: Roll the 808 ON-VOLUME control forward to On.
- Step 4: Set the frequency synthesizer to 32 kHz, square wave, 5 Vp-p. With the digital multimeter ground at J1-2, check the following voltages:

PIN NUMBER	VOLTAGE
J1-1	+5 V $\pm$ 0.3 V
J1-3	-5 V $\pm$ 0.3 V
J2-22	+5 V $\pm$ 0.3 V
J2-24	-5 V $\pm$ 0.2 V
J2-21	+10 V

- Step 5: Roll the ON-VOLUME control back until it clicks to Off.
- Step 6: Disconnect the frequency synthesizer and digital multimeter.
- Step 7: Connect the digital multimeter to J4, with ground lead to pin 2. Voltage should be greater than +16.0 volts.

IMPEDANCE

- 2.20 Check impedances as follows:

(808C only)

- Step 1: Set a digital multimeter to the ohms function. A multimeter which has a low applied-voltage ohms function (0.5 V or less) should be used for the following tests, to ensure that no PN junctions will be turned on in the line driver or receiver circuits.
- Step 2: Connect the digital multimeter to J1 pins 10 and 11 of the 808C A1 board.
- Step 3: Set the 600/900 switch to the 600 position. The digital multimeter should read 3240 ohms $\pm$ 33 ohms.
- Step 4: Now set the 600/900 switch to the 900 position. The digital multimeter should read 4870 ohms $\pm$ 49 ohms.
- Step 5: Disconnect the multimeter from pins 10 and 11, and reconnect to J1 pins 6 and 7.
- Step 6: Set the TERM/BRDG switch to the TERM position, and set the 600/900 switch to the 600 position. The digital multimeter should read 604 ohms $\pm$ 7 ohms.
- Step 7: Now set the 600/900 switch to the 900 position. The digital multimeter should read 905 ohms $\pm$ 10 ohms.
- Step 8: Set the TERM/BRDG switch to BRDG. The multimeter should read greater than 50k ohms.
- Step 9: Disconnect the digital multimeter.

(808C-11 and C-12 only)

- Step 1: Set a digital multimeter to the ohms function. A multimeter which has a low applied-voltage ohms function (0.5 V or less) should be used for the following tests to ensure that no PN junctions will be turned on in the line driver or receiver circuits.
- Step 2: Connect the digital multimeter to J1 pins 10 and 11 of the 808C-11 or C-12 A1 board.
- Step 3: Set the 150/600 switch to the 150 position. The digital multimeter should read 301 ohms $\pm$ 4 ohms.
- Step 4: Now set the 150/600 switch to the 600 position. The digital multimeter should read 1204 ohms $\pm$ 13 ohms.
- Step 5: Disconnect the multimeter from pins 10 and 11 and reconnect to J1 pins 6 and 7.
- Step 6: Set the TERM/BRDG switch to the TERM position and the 150/600 switch to the 150 position. The digital multimeter should read 150 ohms $\pm$ 2 ohms.
- Step 7: Now set the 150/600 switch to the 600 position. The digital multimeter should read 603 ohms $\pm$ 7 ohms.
- Step 8: Set the TERM/BRDG switch to BRDG. The multimeter should read greater than 50k ohms.
- Step 9: Disconnect the digital multimeter.

FUNCTION SELECTOR

2.21 The various functions of the selector switch are tested as follows:

- Step 1: Connect the A1 board to A2 and A3 boards which are known to be working. (If no such boards are available, the unit must be returned to the factory.) Connect the AC voltmeter to the tip and ring (or "A" and "B") terminals of the 808 test cord. Connect a 600 ohm, $\frac{1}{4}$ W, 1 percent resistor between the voltmeter terminals. Set the TERM/BRDG switch of the 808 under test to the BRDG position.
- Step 2: Set the Function Selector to the DIAL position and turn the unit on. During initialization, the display should show "+ 888.8" and dB and Hz LEDs should be on. After initialization the dB and Hz LEDs should go off and the display should show a minus sign at the extreme left. Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights.
- Step 3: Set the Function Selector to LEVEL, dBm position and note that the dB LED lights. Adjust the TRMT LEVEL thumbwheel and verify that the unit displays from + 9.9 to - 40.0 dBm, if the unit under test is an 808C, or C-11. If the unit under test is an 808C-12, adjustment of the thumbwheel should result in a display variation from 0.0 to - 40.0 dBm.
- Step 4: Set the function switch to the 1004/2600 Hz position for an 808C, or the 800/820/850 Hz position for an 808C-11 or C-12. The display should show the selected holding tone to within + 2, - 1 Hz, with the Hz LED lit. Adjust the ON-VOLUME control to verify that the speaker volume changes, and that the sound has no more than a slight cone rattle.

- Step 5: Set the Function Selector switch to the AUTO SWP position and check for tone sweeping. (See Table 2-5 for frequency sweep range.) Verify that the speaker works for all frequencies, without undue rattle.
- Step 6: Set the Function Selector to the SWP HOLD and note that the frequency then being displayed is held. Depress the STEP CONTROL pushbutton and note that the unit sweeps rapidly. Note that when the STEP CONTROL pushbutton is released, the frequency currently displayed is held.
- Step 7: Set the Function Selector to the FREQUENCY position. The display should show 00 with the Hz LED lit, when no signal is applied. Connect the frequency synthesizer to tip and ring (or “A” or “B”) of the 808 test cord, or to the cuff link terminals J7 and J8 on the A1 board. The 808 must display the synthesizer frequency to within ± 3 , -2 Hz over a range of 200 Hz to 4000 Hz for synthesizer output levels between $+9.9$ to -40.0 dBm, as measured by the AC voltmeter.
- Step 8: Disconnect the frequency synthesizer from the 808 test cord and switch the Function Selector to the RCV LEVEL, dBm position. The 808 should display a negative sign at the left-hand side of the display, implying underrange condition.
- Step 9: Reconnect the synthesizer to tip and ring (or “A” and “B”) of the 808 test cord, or to the cuff link terminals J7 and J8 on the A1 board. Set the frequency synthesizer to 1004 Hz for an 808C, or 810 Hz for an 808C-11 or C-12, and adjust the output level to 0.0 dBm as indicated by the AC voltmeter. The 808 under test must display $0.0 \text{ dBm} \pm 0.2 \text{ dB}$.
- Step 10: Set the Function Selector to the ATTN DIST, dB position and verify that the display momentarily shows 1004 Hz for an 808C, or 810 Hz for an 808C-11 or C-12. After momentarily displaying the frequency, the 808 should then display 0.0 dB.
- Step 11: Set the Function Selector to the S/N RATIO, dB position and note that the display shows 70 ± 10 dB. Disconnect the synthesizer without changing any synthesizer settings. The display should show 0.0 with the dB LED lit and the Hz LED blinking.
- Step 12: Reconnect the Frequency Synthesizer and set the Function Selector to the NOTCHED position. The unit under test should read $20 \text{ dBm} \pm 10 \text{ dB}$ for an 808C, or $-70 \text{ dBm} \pm 10 \text{ dB}$ if the unit under test is an 808C-11 or C-12.
- Step 13: Set the Function Selector to the IDLE LINE position and verify a display of $90 \text{ dBm} \pm 0.5 \text{ dB}$ for an 808C, or $0.0 \text{ dBm} \pm 0.5 \text{ dB}$ for the models 808C-11 or C-12.
- Step 14: Set the Function Selector to the TO GROUND position. Connect the ground or common lead of the frequency synthesizer to the analog common point (E1) found on the A1 board, or to the sleeve or ground connection of the 808 test cord. Short tip and ring (or “A” and “B”) on the 808 test cord, or short the cuff link terminals J7 and J8 on the A1 board. Connect the remaining (high side) lead of the synthesizer to this shorted point. The model 808C should display $90 \text{ dBm} \pm 1.5 \text{ dB}$; and models 808C-11 and C-12 should display $0.0 \text{ dBm} \pm 1.5 \text{ dB}$, if the synthesizer settings from previous steps have been left undisturbed.

- Step 15: Repeat Steps 11 through 15, depressing the STEP CONTROL pushbutton to select the 3 kHz flat filter for each case. The 808 under test should be powered by its internal battery when the 3 kHz flat filter is used, to prevent errors due to the injection of ground loop noise at power line frequencies.
- Step 16: Disconnect the frequency synthesizer and set the Function Selector to the DIAL position. Connect a variable 0 to 50 VDC power supply, as shown in Figure 2-3, and adjust its output to 36 V. Switch the power supply meter to measure current and observe that when the 808's STEP CONTROL pushbutton is depressed, a current equal to or greater than 23 mA, but not more than 40 mA, is indicated. To release the holding circuit, the 808 Function Selector must be rotated to any position other than DIAL, and then returned to the DIAL position.
- Step 17: Turn the 808 assembly off and disconnect the A1 board from the A2 and A3 boards.

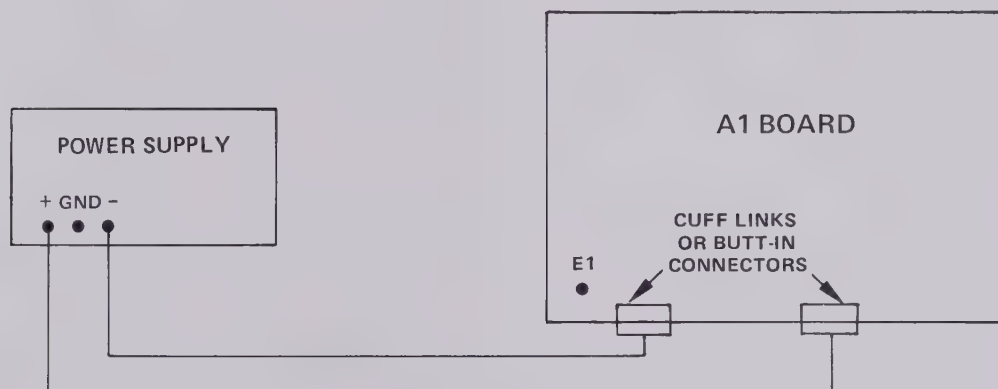


Figure 2-3. Power Supply to Cuff Link Connections

CPU BOARD, A2

- 2.22 Calibration of the A2 CPU board involves the adjustment of the Low Battery Detection Threshold.
- Step 1: The Low Battery Threshold on the A2 board must be adjusted together with the A1 board that will be coassembled with it, into a complete 808 series test set. Control A2 R42 is adjusted to compensate for tolerance in the voltage regulators located on the A1 board. This calibration of A2 requires that it be paired with the A1 board to be used in the finished unit. Connect A1 and A2 using the attached ribbon cables.
- Step 2: Set an adjustable DC supply to 11 V and connect it to J4 on the A1 board ensuring that the positive lead connects to pin 1, and that the negative lead connects to pin 2.
- Step 3: Turn on the 808. Measure the voltage at the wiper of A2 R42 relative to analog common, using a digital multimeter. Adjust A2 R42 until the digital multimeter shows +0.10 V. When the preceding

adjustment is properly made, the unit should repeatedly execute the self-check. During the self-check, the display indicates +888.8 while the audio output reverse sweeps from high to low frequencies.

- Step 4: Increase the voltage applied at J4 on the A1 board to +12 VDC. The 808 under test should complete the self-check mode and proceed with the function selected. As the external supply becomes more positive the voltage measured between the wiper of A2 R42 and analog common should become more negative.
- Step 5: Slowly reduce the voltage applied by the external supply from +12 V to +11 V. The 808 under test should function normally until the external supply voltage reaches +11 V, at which time the unit should begin to repeat the self-check.

NOTE

The Low Battery Detection circuit is not used on early 808C test sets manufactured for sale in the United States. Thus, adjustments of A2 R42 will have no effect on these units.

SIGNAL BOARD, A3

2.23 Calibration of the A3 signal board consists of CMRR (common mode rejection readings), notch filter adjustments, and tests of several functions printed on the Function Selector switch plate, including receive level, attenuation distortion, frequency, notch, idle line, noise-to-ground, signal-to-noise ratio, and transmit level.

CMRR

2.24 To perform the CMRR adjustments, complete the following steps:

- Step 1: Connect ground of the power supply, frequency synthesizer, and AC voltmeter to J2-2 of the A3 board, as shown in Figure 2-4. Connect the +5 V of the power supply to J2-1, and the -5 V to J2-3.

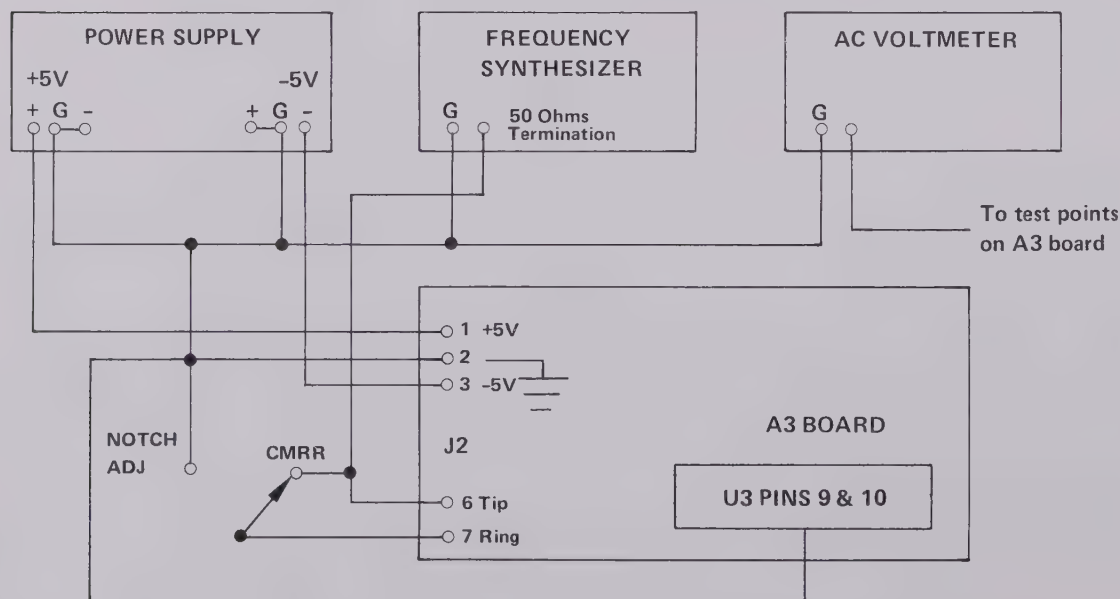


Figure 2-4. CMRR Adjustment Test Equipment Set-Up

- Step 2: Connect the test signal of the frequency synthesizer to J2-6 and J2-7; then connect U3, pins 9 and 10 to ground. Set the synthesizer to +10.0 dBm and 550 Hz.
- Step 3: Connect the AC voltmeter to U5, pin 1.
- Step 4: Adjust A3 R63 for the minimum level indication on the AC voltmeter which should be –50 dBm or less.

NOTCH FILTER

2.25 Adjust the notch filter as follows:

- Step 1: The power and ground connections remain the same as in paragraph 2.24 Steps 1 and 2. Disconnect the synthesizer from J2-7 and reconnect J2-7 to ground.
- Step 2: Set the frequency synthesizer for 0.0 dBm; and, 1010 Hz for an 808C, 800 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U13, pin 14.
- Step 3: Adjust A3 R21 to a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 4: Set the frequency synthesizer to 0.0 dBm; and, 1020 Hz for an 808C, 810 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U13, pin 1.
- Step 5: Adjust A3 R25 for a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 6: Set the frequency synthesizer to 0.0 dBm; and, 1000 Hz for an 808C, 790 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U15, pin 1.
- Step 7: Adjust A3 R29 for a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 8: **(808C only)** Set the frequency synthesizer to 826 Hz. The AC voltmeter should indicate –16.8 to –19.8 dBm.
- Step 9: **(808C only)** Set the frequency synthesizer to 1182 Hz and the AC voltmeter should indicate –16.8 to –19.8 dBm.
- Step 10: Turn the power off and disconnect the A3 board from all test equipment.

FUNCTION SELECT

2.26 Function select tests are performed as follows:

- Step 1: Connect an A3 board under test, to an 808 unit with A1, A2 boards, and a battery pack, which are known to be working.
- Step 2: Connect the 808 unit, frequency synthesizer, and AC voltmeter in accordance with paragraph 2.05.

- Step 3: Receive level:
 Complete Steps 1–3 of paragraph 2.06.
- Step 4: Attenuation Distortion:
 Complete Step 1 of paragraph 2.07.
- Step 5: Frequency:
 Set the frequency synthesizer to 1004 Hz and +10.79 dBm. Set the Function Selector to the FREQUENCY position, and ensure a display of 1004 Hz.
- Step 6: Notch:
 Set the Function Selector to the NOTCHED position and complete Step 2 of paragraph 2.08.
- Step 7: Idle Line:
 Complete Steps 1–3 of paragraph 2.09.
- Step 8: Noise-To-Ground:
 Complete Steps 1–4 of paragraph 2.10.
- Step 9: Signal-To-Noise Ratio:
 Complete Steps 1–4 of paragraph 2.11.
- Step 10: Transmit Level:
 Complete Steps 1–6 of paragraph 2.14.

OPERATIONAL TESTS

2.27 When the set is first powered on, the microprocessor automatically performs a self-check that includes lighting all indicators. The digital display will briefly display +888.8 and the dB and Hz indicators will light.

2.28 The following short functional tests will verify that the 808 is in working order.

- Step 1: Connect the tip and ring (or “A” and “B”) terminals of the 808 test cord to an AC voltmeter capable of measuring in dBm when terminated with a 600 ohm resistance. Connect a 600 ohm, $\frac{1}{4}$ W, 1 percent resistor between the AC voltmeter input terminals.
- Step 2: Turn on the 808 under test and wait for the unit to complete the self-check described in paragraph 2.27. Set the 808 TERM/BRDG switch to BRDG.
- Step 3: Set the Function Selector to the LEVEL, dBm position. Adjust the TRMT LEVEL control until the AC voltmeter indicates 0.0 dBm. Then ensure that the 808 display shows 0.0 dBm $\pm$ 0.2 dB.
- Step 4: Leave the AC voltmeter connected, and in addition connect a frequency synthesizer to the tip and ring (or “A” and “B”) terminals of the 808 test cord. Adjust the synthesizer to a frequency of 1004 Hz and an output level of 0.0 dBm, as measured by the AC voltmeter.
- Step 5: Set the Function Selector to the FREQUENCY position and ensure that the 808 display shows 1004 Hz to within +3, –2 Hz.

- Step 6: Set the Function Selector to the RCV LEVEL, dBm position, and ensure that the 808 displays 0.0 dBm $\pm$ 0.2 dB.
- Step 7: Disconnect the frequency synthesizer and the AC voltmeter from the 808 test cord. Rotate the Function Selector switch through its various positions and verify that the unit responds as indicated in Table 2-6.

Table 2-6. FINAL OPERATION TESTING

Function Selector	Display or Action	Comments
DIAL	“—” at left-hand side	silent
DIAL with pushbutton depressed	“—” at left-hand side m.s.d.* decimal point lit	silent
LEVEL, dBm	level in dBm	audible tone
1004/2600 Hz (808C only)	1004/2600 Hz (change with p.b.)	audible tone
800/820/850 Hz (808C-11 and C-12)	800/820/850 Hz (change with p.b.)	audible tone
AUTO SWP	sweeps frequencies listed in Table 2-5	audible tones
SWP HOLD	holds any frequency	audible tone
FREQUENCY	00 Hz	silent
RCV LEVEL, dBm	“—” at left-hand side and dB LED on	silent
ATTN DIST, dB	blank display with dB LED on	silent
S/N RATIO, dB	0.0 dB w/ dB LED on and Hz LED flashing	max. noise level (C/C-11) silent (C-12)
NOTCHED	blank display with dB LED on	max. noise level (C/C-11) silent (C-12)
IDLE LINE	blank display	max. noise level (C/C-11) silent (C-12)
TO GROUND	blank display	max. noise level (C/C-11) silent (C-12)

*most significant digit decimal point.

3. TECHNICAL DATA

SPECIFICATIONS

- 3.01 Specifications for the three different models, 808C, 808C-11 and 808C-12, are listed in Tables 3-1, 3-2 and 3-3.

Table 3-1. 808C SPECIFICATIONS (U.S.)

TRANSMITTER

Level:	−40 to 9.9 dBm, continuously adjustable, equal power into 600 or 900 ohms
Level Stability:	Less than 0.05 dB/hr variation, after 5-minute warmup
Frequency Stability:	Less than 0.1%/hr drift, after 5 minute warmup
Harmonic distortion plus Noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 900 ohms

Holding Tone

Frequency:	1004 Hz
Accuracy:	−2 to +3 Hz

Signaling Tone

Frequency:	2600 Hz
Accuracy:	−2 to +3 Hz

Variable Oscillator

Long Sweep Plan:	304, 404, 504, 604, 704, 804, 904, 1004, 1104, 1204, 1304, 1404, 1504, 1604, 1704, 1804, 1904, 2004, 2104, 2204, 2304, 2404, 2504, 2704, 2804, 2904, 3004, 3104, 3204, 3304, 3404, 3504, 3604, 3704, 3804, 3904, and 4004 Hz
Accuracy:	−2 to +3 Hz

Variable Oscillator

Short Sweep Plan:	404, 1004, and 2804 Hz
Accuracy:	−2 to +3 Hz
Flatness:	±0.2 dB, relative to 1004 Hz
Sweep Control:	Automatic—approximately 5 seconds per frequency; can be stopped for longer periods using sweep hold Manual—approximately 2 frequencies per second; can be stopped for longer periods at any frequency

RECEIVER

Level Measurements

Frequency Range:	200 Hz to 4000 Hz
Level Range:	−50 dBm to +9.9 dBm

table continued

Table 3-1. 808C SPECIFICATIONS (U.S.) (Continued)**RECEIVER (Continued)**

Level Accuracy:	± 0.1 dB at 1004 Hz, 0 to -19 dBm ± 0.2 dB at 1004 Hz, -20 to -50 dBm ± 0.2 dB at all other frequencies
Range Selection:	Automatic
Detector:	Averaging

Noise Measurements**Level Range**

Metallic:	10 to 90 dBrn ± 0.3 dB (dBrnC, if C-Message filter is used)
To Ground:	50 to 130 dBrn ± 1.5 dB (dBrnC, if C-Message filter is used)
Weighting:	C-Message or 3 kHz flat filter
Range Detection:	Automatic
Detector:	True RMS

Attenuation Distortion Measurements

Range:	-3 to $+12$ dB, ± 0.3 dB
Range Selection:	Automatic

Signal-to-Noise Measurements

Range:	20 to 50 dB ± 1 dB
Range selection:	Automatic

Frequency Counter

Resolution:	± 1 Hz
Range:	60 Hz to 4000 Hz ± 1 Hz
Level Range:	-50 dBm to $+9.9$ dBm
Range Selection:	Automatic

Impedance: 600 ohms, 900 ohms, and bridging

Bridging Impedance: Equal to or greater than 50k ohms

Return Loss: 30 dB at all frequencies

Holding Circuit

DC Current:	23 mA minimum at 17 VDC to 50 VDC of either polarity; 40 mA maximum
-------------	---

POWER REQUIREMENTS

Battery:	Rechargeable 10-cell nickel-cadmium battery pack; 500 mA-hr rated
Battery Voltage:	~ 12 VDC, nominal
Battery Current:	~ 150 mA, quiescent (DIAL position)
Battery charge life:	3 hours continuous use at 68 °F (20 °C)
Battery charging method:	External battery charger, 12 hours for full charge

table continued

Table 3-1. 808C SPECIFICATIONS (U.S.) (Continued)

ENVIRONMENTAL/PHYSICAL	
Temperature	
Operating:	0 °C to +50 °C (+32 °F to +122 °F)
Storage:	−40 °C to +60 °C (−40 °F to 140 °F)
Input Circuit Protection	
Electrical surge: (lightning induction)	Max. 600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals
MISCELLANEOUS	
Enclosure:	Molded High Impact ABS (Acrylonitrile Butadiene Styrene) plastic, beige color
Weight	Less than 3.8 lbs (1.7 kg)
Dimensions	
Length:	10 inches (25.4 cm)
Width:	4.5 inches (11.4 cm)
Depth:	2.25 inches (5.7 cm)

Table 3-2. 808C-11 SPECIFICATIONS (EUROPEAN)

TRANSMITTER	
Level:	−40 to 9.9 dBm, continuously adjustable, equal power into 600 or 150 ohms
Level Stability:	Less than 0.05 dB/hr variation, after 5-minute warm-up
Harmonic distortion plus Noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 150 ohms
Holding Tones	
Frequency:	800/820/850 Hz
Accuracy:	+3 Hz to −2 Hz
Variable Oscillator	
Frequency:	200, 250, 300, 400, 600, 800, 900, 1000, 1400, 1600, 2000, 2400, 2700, 2900, 3000, 3050, 3400, 3600, 3800, 4000, 1004, 1020, and 2040 Hz
Accuracy:	+3 to −2 Hz
Flatness:	±0.2 dB, relative to 800 Hz

table continued

Table 3-2. 808C-11 SPECIFICATIONS (EUROPEAN) (Continued)

Variable Oscillator (Continued)	
Sweep Control:	Automatic—approximately 5 seconds per frequency; can be stopped for longer periods using sweep hold Manual—approximately 2 frequencies per second; can be stopped for longer periods at any frequency
RECEIVER	
Level Measurements	
Frequency Range:	200 Hz to 5000 Hz
Level Range:	– 50 dBm to +9.9 dBm
Level Accuracy:	± 0.2 dB at 800 Hz, 0 dBm to – 19 dBm ± 0.2 dB at 800 Hz, – 20 dBm to – 50 dBm ± 0.3 dB at all frequencies above 4000 Hz
Range Selection:	Automatic
Detector:	Averaging
Noise Measurements	
Level Range	
Metallic:	0 to – 80 dBm ± 1 dB
To Ground:	– 40 dBm to +40 dBm ± 1.5 dB
Weighting:	Psophometric or 3 kHz flat filter
Range Selection:	Automatic
Detector:	True RMS
Attenuation Distortion Measurements	
Range:	– 12 to +3 dB, ± 0.3 dB
Range Selection:	Automatic
Signal-to-Noise Measurements	
Range:	20 dB to 50 dB ± 1 dB
Range selection:	Automatic
Frequency Counter	
Resolution:	± 1 Hz
Range:	60 Hz to 5000 Hz ± 1 Hz
Level Range:	– 50 dBm to +9.9 dBm
Range Selection:	Automatic
Impedance:	600 ohms, 150 ohms, and bridging
Bridging Impedance:	Equal to or greater than 50k ohms
Return Loss:	30 dB at all frequencies
Holding Circuit	
DC Current:	23 mA minimum at 17 VDC to 50 VDC of either polarity; 40 mA maximum

table continued

Table 3-2. 808C-11 SPECIFICATIONS (EUROPEAN) (Continued)**POWER REQUIREMENTS**

Battery:	Rechargeable 10-cell nickel-cadmium battery pack; 500 mA-hr rated
Battery Voltage:	~ 12 VDC, nominal
Battery Current:	~ 150 mA, quiescent (DIAL position)
Battery charge life:	3 hours continuous use at 20 °C (68 °F)
Battery charging method:	External battery charger, 12 hours for full charge

ENVIRONMENTAL/PHYSICAL**Temperature**

Operating:	0 °C to +50 °C (+32 °F to +122 °F)
Storage:	-40 °C to +60 °C (-40 °F to 140 °F)

Input Circuit Protection

Electrical surge: (lightning induction)	Max. 600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals

MISCELLANEOUS

Enclosure:	Molded high impact ABS (Acrylonitrile Butadiene Styrene), beige color
Weight:	Less than 1.6 kg (3.5 lb)

Dimensions

Length:	25.4 cm (10 inches)
Width:	11.4 cm (4.5 inches)
Depth:	5.7 cm (2.25 inches)

Table 3-3. 808C-12 SPECIFICATIONS (B.P.O.)

TRANSMITTER	
Level:	–40 dBm to 0.0 dBm, continuously adjustable, equal power into 600 or 150 ohms
Level Stability:	Less than 0.05 dB/hr variation, after 5-minute warm-up
Frequency Stability:	Less than 0.1%/hr drift, after 5-minute warmup
Harmonic Distortion plus Noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 150 ohms
Holding Tones	
Frequency:	800/820/850 Hz
Accuracy:	+3 Hz to –2 Hz
Variable Oscillator	
Frequency:	304, 404, 504, 604, 804, 1004, 1020, 1200, 1404, 1800, 1904, 2004, 2100, 2204, 2400, 2604, 2704, 2804, 2904, 3004, 3254, 3354, 800, 820, and 850 Hz.
Accuracy:	+3 Hz to –2 Hz
Flatness:	±0.2 dB, relative to 800 Hz
Sweep Control:	Automatic—approximately 5 seconds per frequency; can be stopped for longer periods using sweep hold Manual—approximately 2 frequencies per second; can be stopped for longer periods at any frequency
RECEIVER	
Level Measurements	
Frequency Range:	200 Hz to 5000 Hz
Level Range:	–50 dBm to +9.9 dBm
Level Accuracy:	±0.2 dB at 800 Hz, 0 dBm to –19 dBm ±0.2 dB at 800 Hz, –20 dBm to –50 dBm ±0.3 dB at all other frequencies from 200 Hz to 4.0 kHz
Range Selection:	Automatic
Detector:	Averaging
Noise Measurements	
Level Range	
Metallic:	0 dBm to –80 dBm ±1 dB
To Ground:	–40 dBm to +40 dBm ±1.5 dB
Weighting:	Psophometric or 3 kHz flat filter
Range Selection:	Automatic
Detector:	True RMS

table continued

Table 3-3. 808C-12 SPECIFICATIONS (B.P.O.) (Continued)**Attenuation Distortion Measurements**

Range:	- 12 to +3 dB, ± 0.3 dB
Range Selection:	Automatic

Signal-to-Noise Measurements

Range:	20 dB to 50 dB ± 1 dB
Range selection:	Automatic

Frequency Counter

Resolution:	± 1 Hz
Range:	60 Hz to 4 kHz ± 1 Hz
Level Range:	- 50 dBm to +9.9 dBm
Range Selection:	Automatic

Impedance: 600 ohms, 150 ohms, and Bridging Loss: ± 0.2 dB

Bridging Impedance: Equal to or greater than 50k ohms

Return Loss: 25 dB at all frequencies

Holding Circuit

DC Current:	23 mA minimum at 17 VDC to 50 VDC of either polarity; 40 mA maximum
-------------	---

POWER REQUIREMENTS

Battery:	Rechargeable 10-cell nickel-cadmium battery pack; 500 mA-hr rated
Battery Voltage:	~ 12 VDC, nominal
Battery Current:	~ 150 mA, quiescent (DIAL position)
Battery Charge Life:	3 hours continuous use at 20°C (68°F)
Battery Charging Method:	External battery charger, 12 hours for full charge

ENVIRONMENTAL/PHYSICAL**Temperature**

Operating:	0°C to +50°C (+32°F to +122°F)
Storage:	-40°C to +60°C (-40°F to 140°F)

Input Circuit Protection

Electrical surge: (lightning induction)	Max. 600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals

— table continued —

Table 3-3. 808C-12 SPECIFICATIONS (B.P.O.) (Continued)

MISCELLANEOUS	
Enclosure:	Molded High Impact ABS (Acrylonitrile Butadiene Styrene) plastic, navy blue color
Weight:	Less than 1.6 kg (3.5 lb)
Dimensions	
Length:	25.4 cm (10 inches)
Width:	11.4 cm (4.5 inches)
Depth:	5.7 cm (2.25 inches)

ORDERING INFORMATION

3.02 All models are supplied with a NiCad battery pack. Each model has a captive cord and test plug as shown in Table 3-4. The 808C is also furnished with a charger and two adapters. The 808C-11 has several optional chargers which must be ordered separately. The charger for the 808C-12 is currently supplied by the user. A canvas carrying case and viewing hood are optional for all models. These accessories are listed in Table 3-5.

Table 3-4. 808C SERIES CORDS AND PLUGS

Model	Captive Test Cord Termination	Adapters
808C	Bantam T/R/S plug (0.173"/4.4 mm dia)	Bantam jack to 310 plug; and Bantam jack to alligator clips
808C-11	"Siemens" plug (triple banana)	None
808C-12	Two expansion-pin plugs (single banana) and a crocodile (alligator) clip	None

Table 3-5. ACCESSORIES

Sierra Part Number	Description
C03295600	Replacement Battery Pack
917300512	Charger (808C), 115 VAC
917300513	Charger (808C-11) 220 VAC 50/60 Hz with U.S. style plug
917300514	Charger (808C-11) 230 VAC 50 Hz with European turret terminals
917300518	Charger (808C-11) 220 VAC 50/60 Hz with International Europlug
917300519	Charger (808C-11) 240 VAC 50 Hz with International Australian/New Zealand plug
914400041	Adapter (808C) Bantam jack to 310 plug ¹
916400102	Adapter (808C) Bantam jack to alligator clips
921000079	Canvas Carrying Case
922000008	Viewing Hood

RECOMMENDED SPARE PARTS

3.03 Tables 3-6 and 3-7 show the recommended spare parts for those who plan to repair the 808C, 808C-11 or 808C-12. This list is derived from the factory service records for these instruments. The quantities shown are planned for one unit in the field. These spares should be doubled if four units are to be maintained and tripled for eight units.

Table 3-6. INTERNAL COMPONENTS

Sierra Part Number	Description	Board Location			Qty
		A1	A2	A3	
901100392	Capacitor, Polypropylene, 0.0039 uF 10%, 200V		C31		2
912200213	Crystal, 1.048576 MHz		Y1		1
920204046	I.C. 4046B CMOS		U33		1
920204052	I.C. 4052B CMOS			U3	1
920207442	I.C. 74C42 CMOS		U5, U6		
920210072	I.C. TL072 JFET op amp			U5	1
920210082	I.C. TL082 JFET op amp	U15	U35		1
920210084	I.C. TL084 JFET op amp		U10	U8, U13, U18, U19	2
920220082	I.C. TL082A JFET op amp			U11	1
920220084	I.C. TL084A JFET op amp		U12	U9, U15	2
920274107	I.C. 74C107 CMOS		U32		1
920274373	I.C. 74C373 CMOS	U10, U11	U28, U34		2
920274374	I.C. 74C374 CMOS		U26, U27, U29, U30		2

Table 3-7. EXTERNAL PARTS

Sierra Part Number	Description	Qty
C03294200	(808C) Captive cord with Bantam plug	1
C03319100	(808C-11) Captive cord with a Siemens CF connector	1
C03455100	(808C-12) Captive cord with two pin-plug line leads and a crocodile clip ground lead	1
	One set of the appropriate accessories from Table 3-5 is also recommended.	

4. SCHEMATICS AND PARTS LISTS

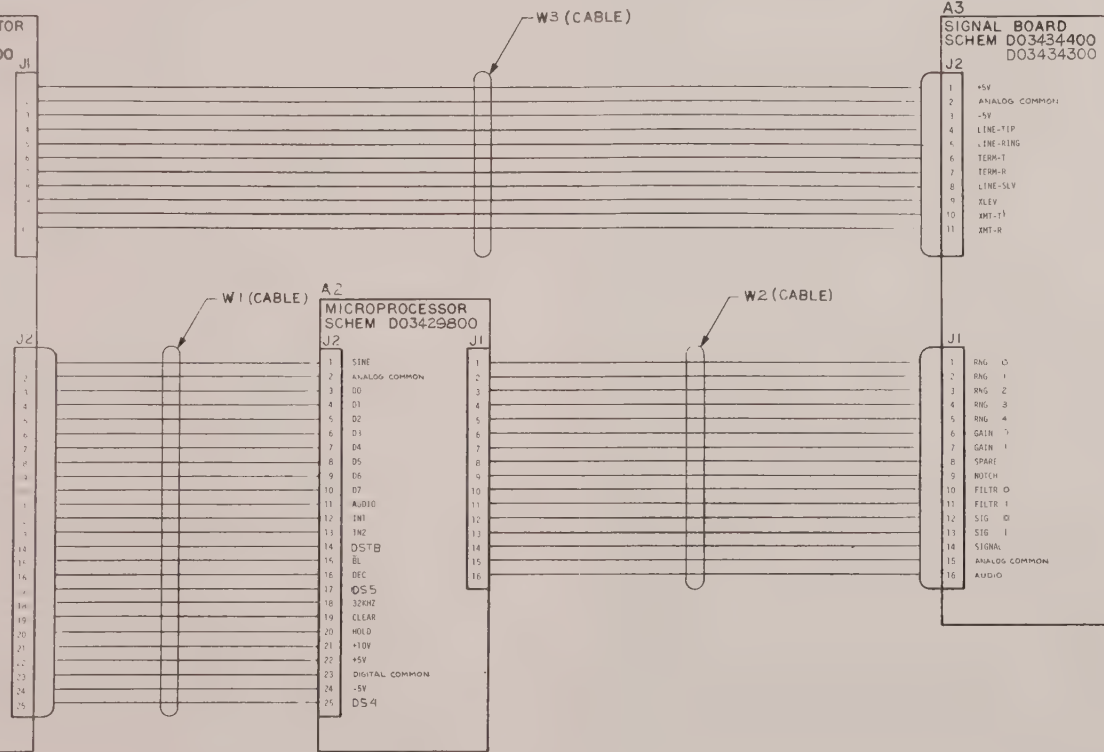
4.01 Following is a list of schematic diagrams and parts lists for Sierra 808C, 808C-11, and 808C-12.

Drawing Number	Description	Instrument
D03484600	Interconnect Diagram	808C, 808C-11, 808C-12
D03430800	A1 Schematic Diagram Display/Selector Board	808C, 808C-11, 808C-12
D03429800	A2 Schematic Diagram Microprocessor	808C, 808C-11, 808C-12
D03434300	A3 Schematic Diagram Signal Board	808C
D03434400	A3 Schematic Diagram Signal Board	808C-11, 808C-12

4.02 The parts lists for each circuit are printed on the back of the schematic diagram. Recommended spare parts, based on factory records, are shown on page 34.

TEST CORD

SLV
RING
TIP

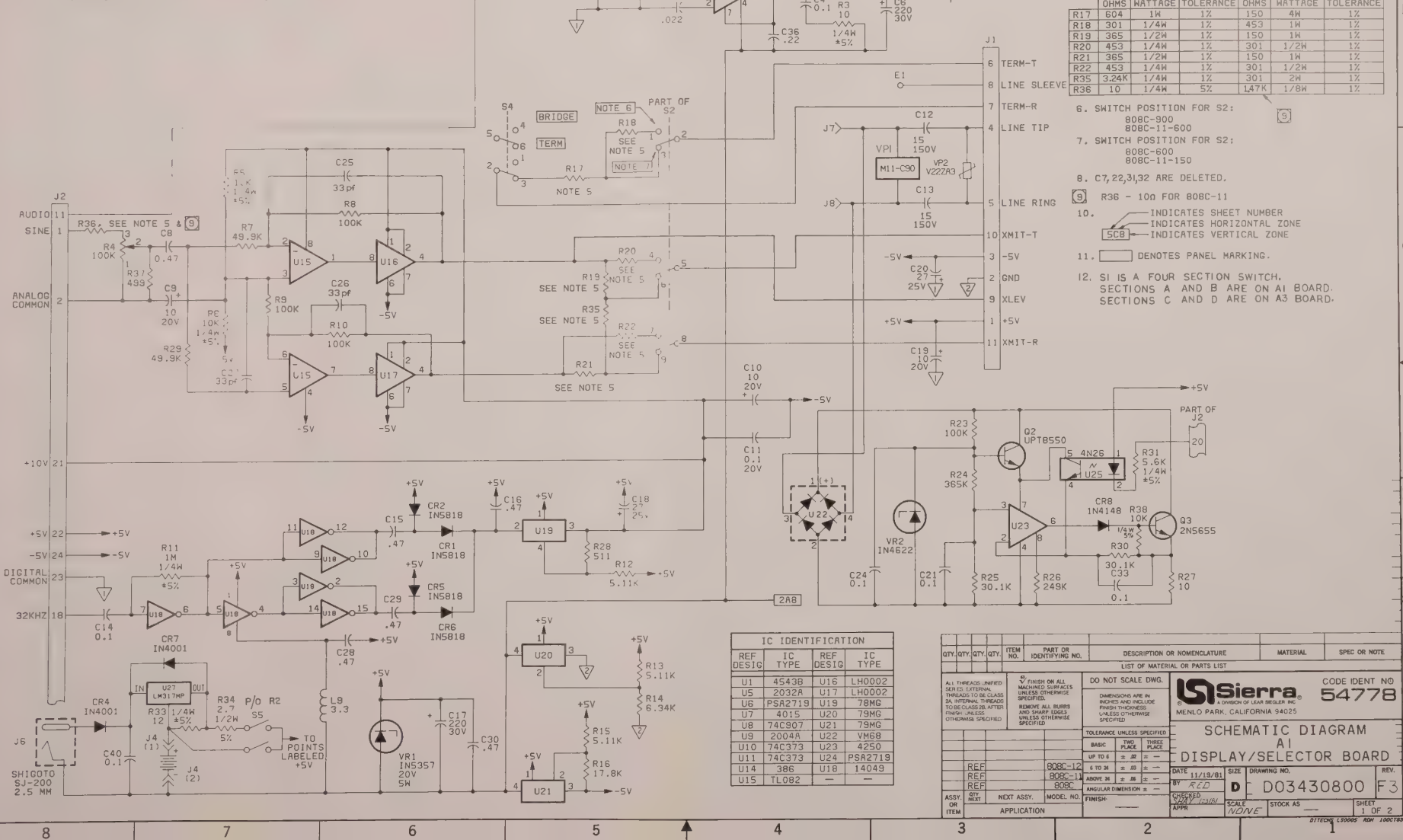


FLEX/STORM			
ZONE	LTR	DESCRIPTION	DATE APPROVED
	A	PER DCO 750	3/2/82 MASON
	B	PER ECO 18298	DD 11/01 JN
	B	PER ECO 18944	W 3/1/88 JN
	C	PER ECO 18551	W 3/2/85 JN
	C	PER ECO 18788	W 3/2/83 JN

QTY				QTY	QTY	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE	
								LIST OF MATERIAL OR PARTS LIST			
ALL THREADS USED ON ALL MACHINED SURFACES, INTERNAL THREADS, EXTERNAL THREADS TO BE CLASS 3A, INTERNAL THREADS TO BE CLASS 2B, AFTER PLATING, UNLESS OTHERWISE SPECIFIED.						FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DWG.			
						 Sierra CODE IDENT. NO. 54778 KEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION 4050 PASEO CALIFORNIA 40505					
						DIMENSIONS ARE IN INCHES AND INCLUDE PLATING, UNLESS OTHERWISE SPECIFIED.			INTERCONNECT DIAGRAM		
						TOLERANCE UNLESS SPECIFIED:					
						BASIC TWO PLACE FRACTIONS THREE PLACE					
REF — 808C-12						6 TO 24 ± .005					
REF — 808C-1						ABOUT 24 ± .005					
REF — 5-8C						ANGULAR DIMENSION ± .005					
DATE 12/18						SIZE D			DRAWING NO. D03484600		
CUTTER 1/2" 118°						SCALE			STOCK AS		
ASSY OR PART						FINISH:			SHEET 1 OF 1		
NEXT ASSY. APPLICATION											

NOTES - UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTANCE VALUES ARE IN OHMS.
2. ALL RESISTORS ARE 1/8W, ±1%.
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL INDUCTANCE VALUES ARE IN MICROHENRYS.



ZONE	LTR	DESCRIPTION	DATE	APPROVED
F1	PER	ECO 18831		
F2	PER	ECO 19071		
F2	PER	ECO 19052		

NOTES CONTINUED:

5.	808C			808C-11 & C-12		
	OHMS	WATTAGE	TOLERANCE	OHMS	WATTAGE	TOLERANCE
R17	604	1W	1%	150	4W	1%
R18	301	1/4W	1%	453	1W	1%
R19	365	1/2W	1%	150	1W	1%
R20	453	1/4W	1%	301	1/2W	1%
R21	365	1/2W	1%	150	1W	1%
R22	453	1/4W	1%	301	1/2W	1%
R35	3.24K	1/4W	1%	301	2W	1%
R36	10	1/4W	5%	147K	1/8W	1%

6. SWITCH POSITION FOR S2: 808C-900, 808C-11-600
7. SWITCH POSITION FOR S2: 808C-600, 808C-11-150
8. C7,22,31,32 ARE DELETED.
9. R36 - 100 FOR 808C-11
10. INDICATES SHEET NUMBER
INDICATES HORIZONTAL ZONE
INDICATES VERTICAL ZONE
11. DENOTES PANEL MARKING.
12. SI IS A FOUR SECTION SWITCH. SECTIONS A AND B ARE ON A1 BOARD. SECTIONS C AND D ARE ON A3 BOARD.

QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
DO NOT SCALE DWG.								
ALL THREADS - UNFINISHED								
DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED								
TOLERANCE UNLESS SPECIFIED								
BASIC TWO PLACE THREE PLACE								
UP TO 6 ± .02 ± .01								
4 TO 30 ± .03 ± .02								
ABOVE 30 ± .04 ± .03								
ANGULAR DIMENSION ± .01								
FINISH								
CHECKED								
APPROVED								
APPLICATION								
DATE 11/18/81								
BY RCD								
SCALE								
STOCK AS								
SHEET 1 OF 2								
D03430800 F3								

Sierra
MENLO PARK, CALIFORNIA 94025

SCHEMATIC DIAGRAM
A1
DISPLAY/SELECTOR BOARD

D03430800

A

Parts List for 808C, -11, -12, A1 Board

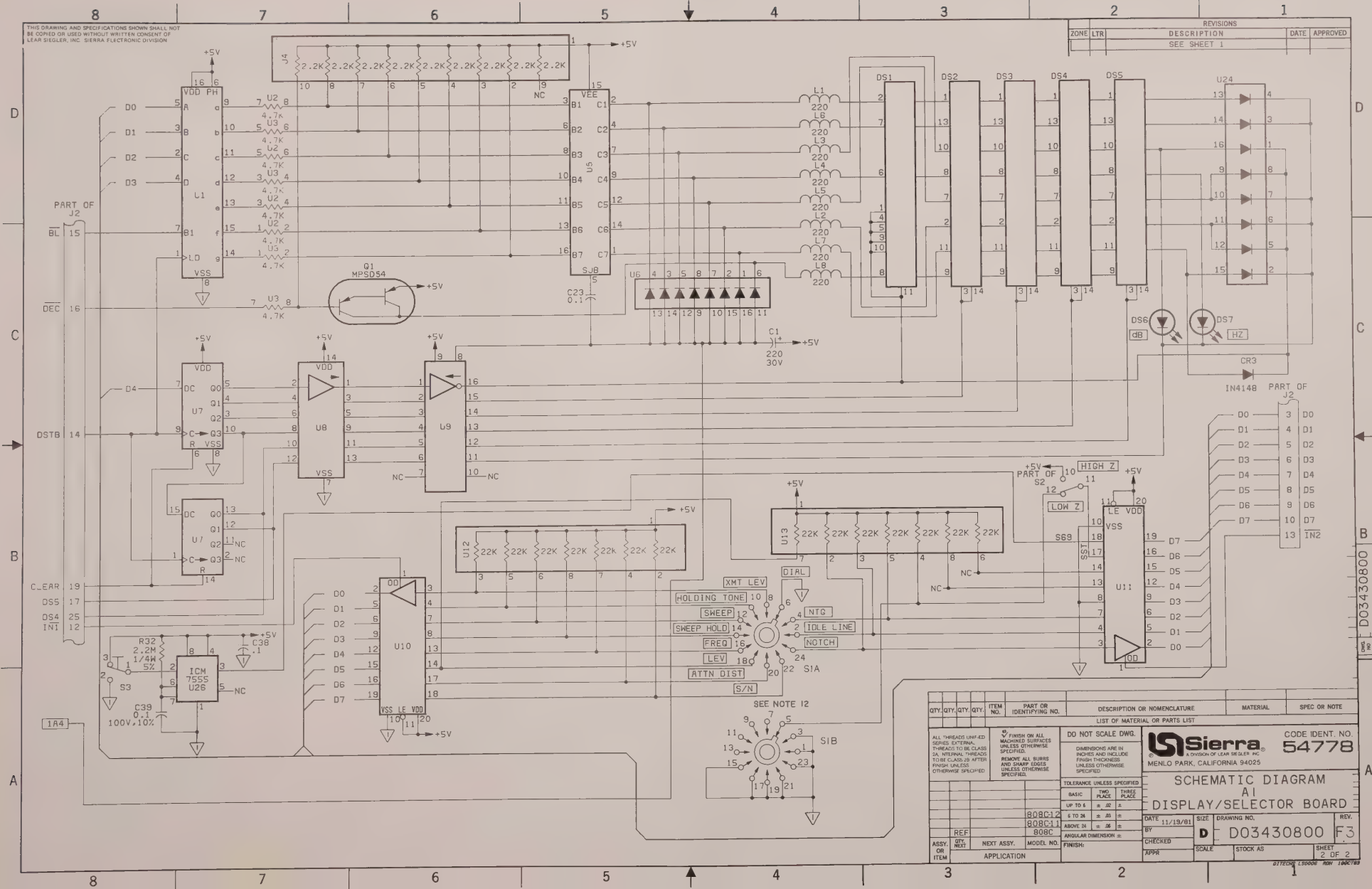
REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 1	Display/Selector Board for 808C	A03430901
A 1	Display/Selector Board for 808C-11	A03430903
A 1	Display/Selector Board for 808C-12	A03430902
C 01	Capacitor 220 uF 20% 30V tantalum	902710227
C 02	Capacitor .47 uF 20% 100V ceramic	901320474
C 03	Capacitor .47 uF 20% 100V ceramic	901320474
C 04	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 05	Capacitor 220 uF 20% 30V tantalum	902710227
C 06	Capacitor 220 uF 20% 30V tantalum	902710227
C 08	Capacitor .47 uF 20% 100V ceramic	901320474
C 09	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 10	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 11	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 12	Capacitor 15 uF -10% +50% 150V electrolytic	903300156
C 13	Capacitor 15 uF -10% +50% 150V electrolytic	903300156
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor .47 uF 20% 100V ceramic	901320474
C 16	Capacitor .47 uF 20% 100V ceramic	901320474
C 17	Capacitor 220 uF 20% 30V tantalum	902710227
C 18	Capacitor 27 uF 10% 25V solid tantalum	902700276
C 19	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 20	Capacitor 27 uF 10% 25V solid tantalum	902700276
C 21	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 23	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 24	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 25	Capacitor 33 pF 2% 100V N2200 ceramic	901430330
C 26	Capacitor 33 pF 2% 100V N2200 ceramic	901430330
C 27	Capacitor 33 pF 2% 100V N2200 ceramic	901430330
C 28	Capacitor .47 uF 20% 100V ceramic	901320474
C 29	Capacitor .47 uF 20% 100V ceramic	901320474
C 30	Capacitor .47 uF 20% 100V ceramic	901320474
C 33	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 34	Capacitor .022 uF 20% 100V ceramic	901310223
C 35	Capacitor .22 uF 10% 50V CK06 ceramic	901330224
C 36	Capacitor .22 uF 10% 50V CK06 ceramic	901330224
C 37	Capacitor .022 uF 20% 100V Z5U ceramic	901310223
C 38	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 39	Capacitor 0.1 uF 10% 100V CK06 ceramic	901330104
C 40	Capacitor 0.1 uF 20% 50V ceramic	901300104

Manufacturer's part numbers are given for some items only to aid identification.
In some cases equivalent components from other suppliers may also be used.

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
CR 01	Rectifier 1N5818 Schottky	910805818
CR 02	Rectifier 1N5818 Schottky	910805818
CR 03	Diode 1N4148 silicon	910504148
CR 04	Diode 1N4001 50V 1A silicon	910504001
CR 05	Rectifier 1N5818 Schottky	910805818
CR 06	Rectifier 1N5818 Schottky	910805818
CR 07	Diode 1N4001 50V 1A silicon	910504001
CR 08	Diode 1N4148 75V silicon	910504148
DS 01	LED display HP 5082-7656 red ± 1	910507656
DS 02	LED display HP 5082-7653 red seven segment	910507653
DS 03	LED display HP 5082-7653 red seven segment	910507653
DS 04	LED display HP 5082-7653 red seven segment	910507653
DS 05	LED display HP 5082-7653 red seven segment	910507653
DS 06	Light emitting diode - red	910504684
DS 07	Light emitting diode - red	910504684
J 01	11-conductor ribbon cable w/plug (W3 on intercon diag)	916400082
J 02	25-pin strip socket	914200089
J 04	3-circuit connector MOLEX 22-03-2031	914800289
J 05	3-circuit connector 90° MOLEX 22-05-2031	914800273
J 06	DC power jack SJ-200	914400053
J 07	Cuff link connector	C03328800
J 08	Cuff link connector	C03328800
L 01	Inductor 220 uH 10% RF shielded	909000193
L 02	Inductor 220 uH 10% RF shielded	909000193
L 03	Inductor 220 uH 10% RF shielded	909000193
L 04	Inductor 220 uH 10% RF shielded	909000193
L 05	Inductor 220 uH 10% RF shielded	909000193
L 06	Inductor 220 uH 10% RF shielded	909000193
L 07	Inductor 220 uH 10% RF shielded	909000193
L 08	Inductor 220 uH 10% RF shielded	909000193
L 09	Inductor 3.3 mH molded	909000184
Q 01	Transistor MPS-D54 PNP silicon	910300540
Q 02	Transistor UPTB 550 NPN power	910307550
Q 03	Transistor 2N5655 silicon NPN power	910305655
R 01	Resistor 10k Ohm 5% 1/4W composition	906900103
R 02	Potentiometer 10k Ohm 20% w/rotary switch (S5)	907920103
R 03	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 04	Potentiometer 100k Ohm 5% 10-turn wire wound	907910104
R 05	Resistor 10k Ohm 5% 1/4W composition	906900103
R 06	Resistor 10k Ohm 5% 1/4W composition	906900103
R 07	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 08	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 09	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 10	Resistor 100k Ohm 1% 1/8W metal film	907301003

Manufacturer's part numbers are given for some items only to aid identification.
In some cases equivalent components from other suppliers may also be used.



Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
R 11	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 12	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 13	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 14	Resistor 6.34k Ohm 1% 1/8W metal film	907306341
R 15	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 16	Resistor 17.8k Ohm 1% 1/8W metal film	907301782
R 17	(808C) Resistor 604 Ohm 1% 1W metal film	907606040
R 17	(808C-11 & -12) Resistor 150 Ohm 1% 4W power film	907601500
R 18	(808C) Resistor 301 Ohm 1% 1/4W metal film	908303010
R 18	(808C-11 & -12) Resistor 453 Ohm 1% 1W metal film	907604530
R 19	(808C) Resistor 365 Ohm 1% 1/2W metal film	907413650
R 19	(808C-11 & -12) Resistor 150 Ohm 1% 1W metal film	907611500
R 20	(808C) Resistor 453 Ohm 1% 1/4W metal film	908304530
R 20	(808C-11 & -12) Resistor 301 Ohm 1% 1/2W metal film	907403010
R 21	(808C) Resistor 365 Ohm 1% 1/2W metal film	907413650
R 21	(808C-11 & -12) Resistor 150 Ohm 1% 1W metal film	907611500
R 22	(808C) Resistor 453 Ohm 1% 1/4W metal film	908304530
R 22	(808C-11 & -12) Resistor 301 Ohm 1% 1/2W metal film	907403010
R 23	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 24	Resistor 365k Ohm 1% 1/8W metal film	907303653
R 25	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 26	Resistor 249k Ohm 1% 1/8W metal film	907302493
R 27	Resistor 10 Ohm 1% 1/8W metal film	907310100
R 28	Resistor 511 Ohm 1% 1/8W metal film	907305110
R 29	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 30	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 31	Resistor 5.6k Ohm 5% 1/4W composition	906900562
R 32	Resistor 2.2 meg Ohm 5% 1/4W composition	906900225
R 33	Resistor 12 Ohm 5% 1/4W composition	906900120
R 34	Resistor 2.7 Ohm 5% 1/2W composition	905002R70
R 35	(808C) Resistor 3.24k Ohm 1% 1/4W metal film	908303241
R 35	(808C-11 & -12) Resistor 301 Ohm 1% 2W precision film	907803010
R 36	(808C & 808C-11) Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 36	(808C-12) Resistor 1.47k Ohm 1% 1/8W metal film	907301471
R 37	Resistor 499 Ohm 1% 1/8W metal film	907304990
R 38	Resistor 10k Ohm 5% 1/4W composition	906900103
S 01	Switch 12-pos 2-pole rotary (used with S1 on A3 board)	911200289
S 02	Switch 4PDT rocker PC mount	911000095
S 03	Switch 3-pole 2-throw pushbutton	911300072
S 04	Switch DPDT 5A rocker	911000096
S 05	Switch (Part of R2)	907920103
SPKR	Speaker assembly with plug	A03246400

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
U 01	IC 4543B CMOS	920204543
U 02	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 03	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 04	Common-junction resistor network 2.2k Ohm 2% 0.2W	920610222
U 05	Transistor array Sprague ULN2032A	920302032
U 06	IC Fairchild FSA2719M diode array	920302719
U 07	IC 4015B CMOS	920204015
U 08	IC 74C907 CMOS	920274907
U 09	IC 1416 CMOS	920201416
U 10	IC 74C373 CMOS	920274373
U 11	IC 74C373 CMOS	920274373
U 12	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 13	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 14	IC LM386N CMOS	920300386
U 15	IC TL082 JFET op amp	920210082
U 16	IC LH0002C current amplifier	920310002
U 17	IC LH0002C current amplifier	920310002
U 18	IC 4049B CMOS	920204049
U 19	IC Fairchild UA78MGV1C voltage regulator	920310078
U 20	IC Fairchild UA79MGV1C voltage regulator	920310079
U 21	IC Fairchild UA79MGV1C voltage regulator	920310079
U 22	Bridge Varo VM68 dual in-line	910800068
U 23	IC LM4250CN programmable operational amplifier	920304250
U 24	IC Fairchild FSA2719M diode array	920302719
U 25	IC 4N26 opto-isolator	920300426
U 26	IC 7555 CMOS timer	920207555
U 27	IC LM 317M voltage regulator	920330317
VP 01	Surge voltage protector Siemens M11-(91)	913100005
VP 02	Metal oxide varistor GE V222A3	913600028
VR 01	Zener diode 1N5357 20V 20% 5W	910505357
VR 02	Zener diode 1N4622 3.9V 5% 250 uA	910634622

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
U 01	IC 4543B CMOS	920204543
U 02	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 03	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 04	Common-junction resistor network 2.2k Ohm 2% 0.2W	920610222
U 05	Transistor array Sprague ULN2032A	920302032
U 06	IC Fairchild FSA2719M diode array	920302719
U 07	IC 4015B CMOS	920204015
U 08	IC 74C907 CMOS	920274907
U 09	IC 1416 CMOS	920201416
U 10	IC 74C373 CMOS	920274373
U 11	IC 74C373 CMOS	920274373
U 12	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 13	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 14	IC LM386N CMOS	920300386
U 15	IC TL082 JFET op amp	920210082
U 16	IC LH0002C current amplifier	920310002
U 17	IC LH0002C current amplifier	920310002
U 18	IC 4049B CMOS	920204049
U 19	IC Fairchild UA78MGVIC voltage regulator	920310078
U 20	IC Fairchild UA79MGVIC voltage regulator	920310079
U 21	IC Fairchild UA79MGVIC voltage regulator	920310079
U 22	Bridge Varo VM68 dual in-line	910800068
U 23	IC LM4250CN programmable operational amplifier	920304250
U 24	IC Fairchild FSA2719M diode array	920302719
U 25	IC 4N26 opto-isolator	920300426
U 26	IC 7555 CMOS timer	920207555
U 27	IC LM 317M voltage regulator	920330317
VP 01	Surge voltage protector Siemens M11-(91)	913100005
VP 02	Metal oxide varistor GE V222A3	913600028
VR 01	Zener diode 1N5357 20V 20% 5W	910505357
VR 02	Zener diode 1N4622 3.9V 5% 250 uA	910634622

Manufacturer's part numbers are given for some items only to aid identification.
In some cases equivalent components from other suppliers may also be used.

NOTES - UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTANCE VALUES ARE IN OHMS.
2. ALL RESISTORS ARE 1/8W, 412.
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL DIODES ARE 1N4148.
5. INDICATES SHEET NUMBER
6. INDICATES HORIZONTAL ZONE
7. INDICATES VERTICAL ZONE

5. 5C8

6. DENOTES GROUND RETURN.

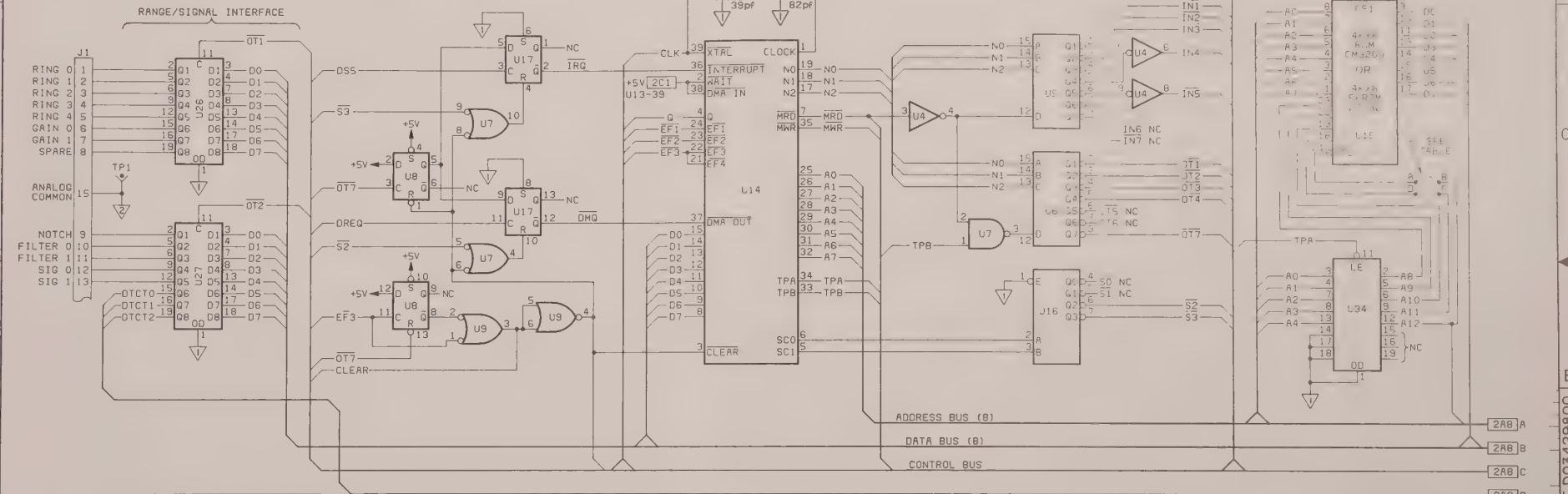
7. DENOTES GROUND REF.

RESET/DMA OUT/INTERRUPT CONTROL

MICRO PROCESSOR

INPUT OUTPUT

MEMORY (ROM OR EPROM)



IC POWER PIN-OUT									
REF DESIG	IC TYPE	+5	(-5V) GND	REF DESIG	IC TYPE	+5	(-5V) GND		
U4	14069	14	7	U23	4528	18	8		
U5	74C42	16	8	U24	1823	24	12		
U6	74C42	16	8						
U7	14011	14	7	U26	74C374	20	10		
U8	74C74	14	7	U27	74C374	20	10		
U9	14001	14	7	U28	74C373	20	10		
U12	TL084	4	(11)	U29	74C374	20	10		
U13	AD7550			U30	74C374	20	10		
U14	1802	40,16	20	U32	74C107	14	7		
U15	NOTE 6	24	12	U33	4046	16	8		
U16	MC14556	16	8	U34	74C373	20	10		
U17	4013	14	7	U1	AD536J				
U18	4520	16	8	U2	AD580L				
U19	7531K	16	3	U35	TL082	8	(4)		
U20	7531K	16	3	U10	TL084	4	(11)		
U21	4040	16	8	U3	14051				
U22	4520	16	8						

U15 JUMPER TABLE		
DEVICE	FROM	TO
CM3200	A	B
	D	C
27C32	A	C
	D	B

QTY	QTY	QTY	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST							
AL. THREADS UNFINISHED SERIES EXTERNAL THREADS TO BE CLASS IN VERTICAL THREADS TO BE CLASS IN AFTER FINISH UNLESS OTHERWISE SPECIFIED FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED DO NOT SCALE DWG. DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED							
TOLERANCE UNLESS SPECIFIED BASIC TWO THREE PLACE UP TO 4 ± .02 2 4 TO 24 ± .03 1 24 TO 48 ± .04 1 48 TO 96 ± .05 1 96 TO 192 ± .06 1 192 TO 384 ± .08 1 384 TO 768 ± .10 1 768 TO 1536 ± .12 1 1536 TO 3072 ± .15 1 3072 TO 6144 ± .20 1 6144 TO 12288 ± .25 1 12288 TO 24576 ± .31 1 24576 TO 49152 ± .39 1 49152 TO 98304 ± .50 1 98304 TO 196608 ± .62 1 196608 TO 393216 ± .78 1 393216 TO 786432 ± .100 1 786432 TO 1572864 ± .125 1 1572864 TO 3145728 ± .156 1 3145728 TO 6291456 ± .199 1 6291456 TO 12582912 ± .250 1 12582912 TO 25165824 ± .312 1 25165824 TO 50331648 ± .390 1 50331648 TO 100663296 ± .496 1 100663296 TO 201326592 ± .625 1 201326592 TO 402653184 ± .781 1 402653184 TO 805306368 ± .984 1 805306368 TO 1610612736 ± 1.250 1 1610612736 TO 3221225472 ± 1.562 1 3221225472 TO 6442450944 ± 1.992 1 6442450944 TO 12884901888 ± 2.500 1 12884901888 TO 25769803776 ± 3.125 1 25769803776 TO 51539607552 ± 3.906 1 51539607552 TO 103079215104 ± 4.921 1 103079215104 TO 206158430208 ± 6.171 1 206158430208 TO 412316860416 ± 7.714 1 412316860416 TO 824633720832 ± 9.516 1 824633720832 TO 1649267441664 ± 11.945 1 1649267441664 TO 3298534883328 ± 15.187 1 3298534883328 TO 6597069766656 ± 19.354 1 6597069766656 TO 13194139533312 ± 24.531 1 13194139533312 TO 26388279066624 ± 30.812 1 26388279066624 TO 52776558133248 ± 38.990 1 52776558133248 TO 105553116266496 ± 49.363 1 105553116266496 TO 211106232532992 ± 61.954 1 211106232532992 TO 422212465065984 ± 77.942 1 422212465065984 TO 844424930131968 ± 97.927 1 844424930131968 TO 1688849860263936 ± 123.909 1 1688849860263936 TO 3377699720527872 ± 156.875 1 3377699720527872 TO 6755399441055744 ± 198.906 1 6755399441055744 TO 13510798882111488 ± 251.953 1 13510798882111488 TO 27021597764222976 ± 317.941 1 27021597764222976 TO 54043195528445952 ± 399.926 1 54043195528445952 TO 108086391056891904 ± 503.908 1 108086391056891904 TO 216172782113783808 ± 637.875 1 216172782113783808 TO 432345564227567616 ± 807.844 1 432345564227567616 TO 864691128455135232 ± 1019.812 1 864691128455135232 TO 1729382256910270464 ± 1274.766 1 1729382256910270464 TO 3458764513820540928 ± 1614.665 1 3458764513820540928 TO 6917529027641081856 ± 2039.512 1 6917529027641081856 TO 13835058055282163712 ± 2574.375 1 13835058055282163712 TO 27670116110564327424 ± 3242.969 1 27670116110564327424 TO 55340232221128654848 ± 4053.711 1 55340232221128654848 TO 110680464442257309696 ± 5067.297 1 110680464442257309696 TO 221360928884514619392 ± 6334.125 1 221360928884514619392 TO 442721857769029238784 ± 7917.750 1 442721857769029238784 TO 885443715538058477568 ± 9947.312 1 885443715538058477568 TO 1770887431076116955136 ± 12434.125 1 1770887431076116955136 TO 3541774862152233910272 ± 15542.625 1 3541774862152233910272 TO 7083549724304467820544 ± 19428.125 1 7083549724304467820544 TO 14167099448608935641088 ± 24285.125 1 14167099448608935641088 TO 28334198897217871282176 ± 30356.625 1 28334198897217871282176 TO 56668397794435742564352 ± 37945.625 1 56668397794435742564352 TO 113336795588871485128704 ± 47432.125 1 113336795588871485128704 TO 226673591177742970257408 ± 58664.125 1 226673591177742970257408 TO 453347182355485940514816 ± 72830.625 1 453347182355485940514816 TO 906694364710971881029632 ± 90039.125 1 906694364710971881029632 TO 1813388729421943762059264 ± 112548.625 1 1813388729421943762059264 TO 3626777458843887524118528 ± 141187.125 1 3626777458843887524118528 TO 7253554917687775048237056 ± 176483.625 1 7253554917687775048237056 TO 14507109835375550096474112 ± 216854.625 1 14507109835375550096474112 TO 29014219670751100192948224 ± 269868.125 1 29014219670751100192948224 TO 58028439341502200385896448 ± 336886.625 1 58028439341502200385896448 TO 116056878683004400771792896 ± 416109.125 1 116056878683004400771792896 TO 232113757366008801543585792 ± 507672.625 1 232113757366008801543585792 TO 464227514732017603087171584 ± 615245.125 1 464227514732017603087171584 TO 928455029464035206174343168 ± 756490.625 1 928455029464035206174343168 TO 1856910058928070412348686336 ± 928245.125 1 1856910058928070412348686336 TO 3713820117856140824697372672 ± 1135300.625 1 3713820117856140824697372672 TO 7427640235712281649394745344 ± 1414100.625 1 7427640235712281649394745344 TO 14855280471424563298789490688 ± 1767620.625 1 14855280471424563298789490688 TO 29710560942849126597578981376 ± 2169520.625 1 29710560942849126597578981376 TO 59421121885698253195157962752 ± 2696000.625 1 59421121885698253195157962752 TO 118842243771396506390315925504 ± 3322500.625 1 118842243771396506390315925504 TO 237684487542793012780631851008 ± 4079000.625 1 237684487542793012780631851008 TO 475368975085586025561263702016 ± 5035500.625 1 475368975085586025561263702016 TO 950737950171172051122527404032 ± 6242000.625 1 950737950171172051122527404032 TO 1901475900342344102245054808064 ± 7703500.625 1 1901475900342344102245054808064 TO 3802951800684688204490109616128 ± 9524500.625 1 3802951800684688204490109616128 TO 7605903601369376408980219232256 ± 11795500.625 1 7605903601369376408980219232256 TO 15211807202738752817960438464512 ± 14596500.625 1 15211807202738752817960438464512 TO 30423614405477505635920876929024 ± 18197500.625 1 30423614405477505635920876929024 TO 60847228810955011271841753858048 ± 22248500.625 1 60847228810955011271841753858048 TO 121694457621910022543683507716096 ± 27100000.625 1 121694457621910022543683507716096 TO 243388915243820045087367015432192 ± 33250000.625 1 243388915243820045087367015432192 TO 486777830487640090174734030864384 ± 40750000.625 1 486777830487640090174734030864384 TO 973555660975280180349468061728768 ± 50300000.625 1 973555660975280180349468061728768 TO 1947111321950560360698936123457536 ± 62400000.625 1 1947111321950560360698936123457536 TO 3894222643901120721397872246915072 ± 77000000.625 1 3894222643901120721397872246915072 TO 7788445287802241442795744493830144 ± 95200000.625 1 7788445287802241442795744493830144 TO 15576890575604482885591488987660288 ± 117900000.625 1 15576890575604482885591488987660288 TO 31153781151208965771182977975320576 ± 145900000.625 1 31153781151208965771182977975320576 TO 62307562302417931542365955950641152 ± 181900000.625 1 62307562302417931542365955950641152 TO 124615124604835863084731911901282304 ± 222400000.625 1 124615124604835863084731911901282304 TO 249230249209671726169463823802564608 ± 271000000.625 1 249230249209671726169463823802564608 TO 498460498419343452338927647605129216 ± 332500000.625 1 498460498419343452338927647605129216 TO 996920996838686904677855295210258432 ± 407500000.625 1 996920996838686904677855295210258432 TO 1993841993677373809355710590420516864 ± 503000000.625 1 1993841993677373809355710590420516864 TO 3987683987354747618711421180841033728 ± 624000000.625 1 3987683987354747618711421180841033728 TO 7975367974709495237422842361682067456 ± 770000000.625 1 7975367974709495237422842361682067456 TO 15950735949418990474845684723364134912 ± 952000000.625 1 15950735949418990474845684723364134912 TO 31901471898837980949691369446728269824 ± 1179000000.625 1 31901471898837980949691369446728269824 TO 63802943797675961899382738893456539648 ± 1459000000.625 1 63802943797675961899382738893456539648 TO 127605887595351923798765477786913079296 ± 1819000000.625 1 127605887595351923798765477786913079296 TO 255211775190703847597530955573826158592 ± 2224000000.625 1 255211775190703847597530955573826158592 TO 510423550381407695195061911147652317184 ± 2710000000.625 1 510423550381407695195061911147652317184 TO 1020847100762815390390123822295304634368 ± 3325000000.625 1 1020847100762815390390123822295304634368 TO 2041694201525630780780247644590609268736 ± 4075000000.625 1 2041694201525630780780247644590609268736 TO 4083388403051261561560495289181218537472 ± 5030000000.625 1 4083388403051261561560495289181218537472 TO 8166776806102523123120990578362437074944 ± 6240000000.625 1 8166776806102523123120990578362437074944 TO 16333553612205046246241981156724874149888 ± 7700000000.625 1 16333553612205046246241981156724874149888 TO 32667107224410092492483962313449748299776 ± 9520000000.625 1 32667107224410092492483962313449748299776 TO 65334214448820184984967924626899496599552 ± 11790000000.625 1 65334214448820184984967924626899496599552 TO 130668428897640369969935849253798993199104 ± 14590000000.625 1 130668428897640369969935849253798993199104 TO 261336857795280739939871698507597986398208 ± 18190000000.625 1 261336857795280739939871698507597986398208 TO 522673715590561479879743397015195972796416 ± 22240000000.625 1 522673715590561479879743397015195972796416 TO 1045347431181122959759486794030391945592832 ± 27100000000.625 1 10							

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 2	Microprocessor Board for 808C	A03429901
A 2	Microprocessor Board for 808C-11	A03429902
A 2	Microprocessor Board for 808C-12	A03429903
C 01	Capacitor 10 pF 5% 500V clipped mica	901900100
C 02	Capacitor 39 pF 5% 500V dipped mica	901900390
C 03	Capacitor 82 pF 2% 500V dipped mica	901900820
C 04	Capacitor .47 20% 100V ceramic	901320474
C 05	Capacitor 0.1 uF 5% 50V metalized polycarbonate	903120104
C 06	Capacitor 3.3 uF 20% 25V tantalum	902720335
C 07	Capacitor 2.2 uF 10% 35V tantalum	902720225
C 08	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 11	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 12	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 13	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 16	Capacitor 10 uF 20% 10V tantalum	902760106
C 17	Capacitor 10 uF 20% 10V tantalum	902760106
C 19	Capacitor 120 pF 5% 500V dipped mica	901900121
C 20	Capacitor 120 pF 5% 500V dipped mica	901900121
C 21	Capacitor 2200 pF 1% 100V NPO ceramic	901310222
C 22	Capacitor 2200 pF 1% 100V NPO ceramic	901310222
C 23	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 25	Capacitor 10 uF 20% 10V tantalum	902760106
C 26	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 28	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 29	Capacitor 120 pF 5% 500V dipped mica	901900121
C 30	Capacitor 0.47 uF 10% 50V metalized polycarbonate	903100474
C 31	Capacitor .0039 uF 10% 200V polypropylene	901100392
C 32	Capacitor 10 uF 20% 10V tantalum	902760106
C 33	Capacitor 10 uF 20% 10V tantalum	902760106
C 34	Capacitor 10 uF 20% 10V tantalum	902760106
C 37	Capacitor 1000 pF 10% 200V ceramic	901320102
C 39	Capacitor .47 20% 100V ceramic	901320474
C 41	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 42	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 43	Capacitor 10 uF 20% 10V tantalum	902760106
C 44	Capacitor 27000 pF 10% 100V ceramic	901300273
CR 01	Diode 1N4148 silicon	910504148
CR 02	Diode 1N4148 silicon	910504148
CR 03	Diode 1N4148 silicon	910504148
CR 04	Diode 1N4148 silicon	910504148
CR 05	Diode 1N4148 silicon	910504148

Manufacturer's part numbers are given for some items only to aid identification.
In some cases equivalent components from other suppliers may also be used.

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
CR 08	Diode 1N4148 silicon	910504148
CR 09	Diode 1N4148 silicon	910504148
CR 10	Rectifier 1N5818	910805818
J 01	16-conductor ribbon cable w/plug (W2 on intercon diag)	916400160
J 02	(Pin 1-11) 11-cond ribbon cable w/plug (W1 on int diag)	916400150
J 02	(Pin 12-25) 14-cond ribbon cable w/plug (W1 on int diag)	916400126
Q 01	Transistor PN4393 junction FET	910304393
R 01	Resistor 10 meg Ohm 5% 1/4W composition	906900106
R 03	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 04	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 06	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 07	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 08	Resistor 1 meg Ohm 5% 1/2W composition	906900105
R 09	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 10	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 11	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 13	Resistor 10k Ohm 5% 1/4W composition	906900103
R 14	Resistor 3.16k Ohm 1% 1/8W metal film	907303161
R 15	Resistor 6.65k Ohm 1% 1/8W metal film	907306651
R 16	Resistor 562k Ohm 1% 1/8W metal film	907305623
R 17	Resistor 562k Ohm 1% 1/8W metal film	907305623
R 18	Resistor 562k Ohm 1% 1/8W metal film	907305623
R 19	Resistor 40.2k Ohm 1% 1/8W metal film	907304022
R 20	Resistor 1 meg Ohm 5% 1/2W composition	906900105
R 21	Resistor 20k Ohm 5% 1/4W composition	906900203
R 22	Resistor 20k Ohm 5% 1/4W composition	906900203
R 23	Resistor 4.3k Ohm 5% 1/4W composition	906900432
R 24	Resistor 47 Ohm 5% 1/4W composition	906900470
R 25	Resistor 40.2k Ohm 1% 1/8W metal film	907304022
R 26	Resistor 17.4k Ohm 1% 1/8W metal film	907301742
R 27	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 28	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 29	Resistor 1 meg Ohm 5% 1/2W composition	906900105
R 30	Resistor 20k Ohm 5% 1/4W composition	906900203
R 31	Resistor 5.1k Ohm 5% 1/4W composition	906900512
R 32	Resistor 10k Ohm 5% 1/4W composition	906900103
R 33	Resistor 100k Ohm 5% 1/4W composition	906900104
R 34	Resistor 22 meg Ohm 5% 1/4W composition	906900226
R 37	Resistor 17.4k Ohm 1% 1/8W metal film	907301742
R 38	Resistor 499k Ohm 1% 1/8W metal film	907304993
R 39	Resistor 10k Ohm 5% 1/4W composition	906900103
R 40	Resistor 45.3k Ohm 1% 1/8W metal film	907304532
R 41	Resistor 4.99 k Ohm 1% 1/8W metal film	907304991
R 42	Potentiometer 500 Ohm cermet Beckman 68PR500	907930501

Manufacturer's part numbers are given for some items only to aid identification.
In some cases equivalent components from other suppliers may also be used.

FREQUENCY PRESCALE (X32) AND INTERFACE

ZONE	LTR	DESCRIPTION	DATE	APPROVED
1				

READ/WRITE MEMORY (RAM)

PART OF J1

SIGNAL 14

C4 0.47

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Parts List for 808C, -11, -12, A2 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
U 01	IC AD536J	920300536
U 02	IC AD580L	920310580
U 03	IC 4051B CMOS	920204051
U 04	IC 4069 CMOS	920204069
U 05	IC 74C42 CMOS	920207442
U 06	IC 74C42 CMOS	920207442
U 07	IC 4011B CMOS	920204011
U 08	IC 74C74 CMOS	920207474
U 09	IC 4001B CMOS	920204001
U 10	IC TL084 JFET op amp	920210084
U 11	Isolated resistor network 100k Ohm 1% 1/8W	920816104
U 12	IC TL084A JFET op amp	920220084
U 13	IC 7550B CMOS	920207550
U 14	IC 1802C CMOS	920201802
U 15	(808C) IC custom programmed EPROM	A03504500
U 15	(808C-11) IC custom programmed EPROM	A03453200
U 15	(808C-12) IC custom programmed EPROM	A03535100
U 16	IC 4556B CMOS	920204556
U 17	IC 4013B CMOS	920204013
U 18	IC 4520B CMOS	920204520
U 19	IC 7531K CMOS	920207531
U 20	IC 7531K CMOS	920207531
U 21	IC 4040B CMOS	920204040
U 22	IC 4520B CMOS	920204520
U 23	IC 4528B CMOS	920204528
U 24	IC 1823C CMOS	920201823
U 26	IC 74C374 CMOS	920274374
U 27	IC 74C374 CMOS	920274374
U 28	IC 74C373 CMOS	920274373
U 29	IC 74C374 CMOS	920274374
U 30	IC 74C374 CMOS	920274374
U 32	IC 74C107 CMOS	920274107
U 33	IC 4046B CMOS	920204046
U 34	IC 74C373 CMOS	920274373
U 35	IC TL082 JFET op amp	920210082
Y 01	Crystal 1.048576 mHz	912200213

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

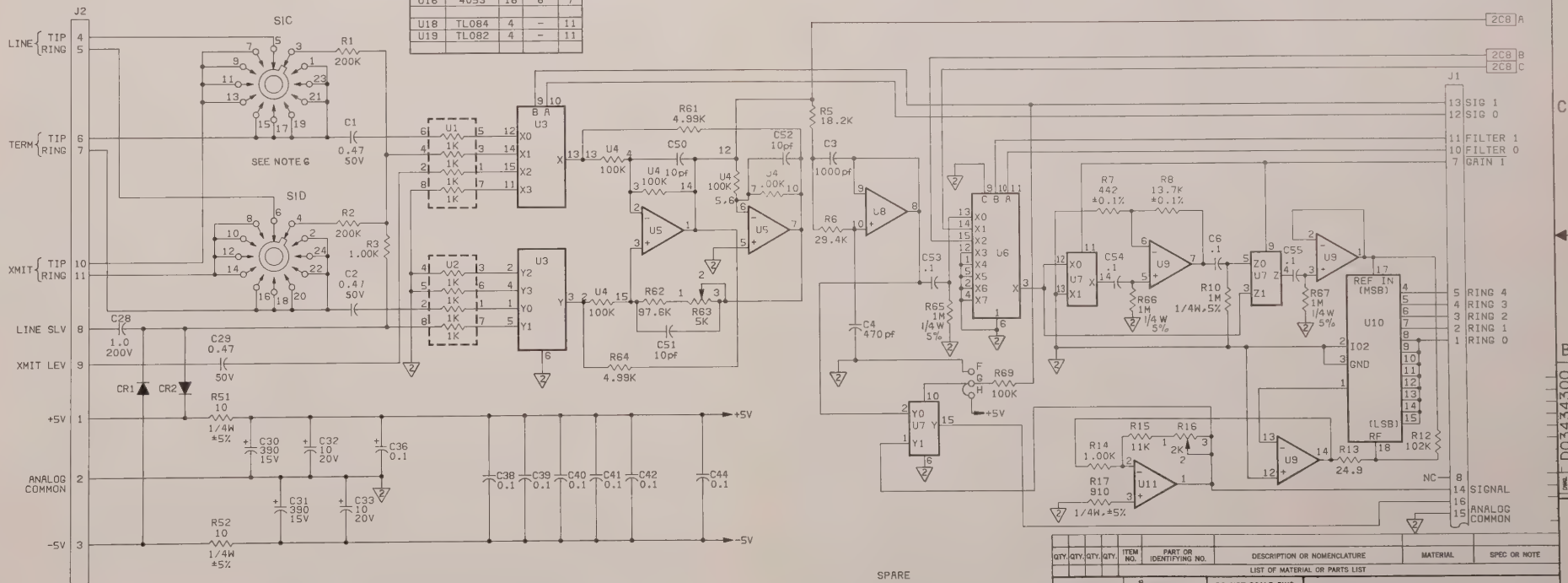


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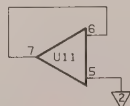
NOTES - UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTANCE VALUES ARE IN OHMS.
2. ALL RESISTORS ARE 1/8W, $\pm 1\%$.
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL DIODES ARE 1N 4148
5.
 - INDICATES SHEET NUMBER
 - INDICATES HORIZONTAL ZONE
 - INDICATES VERTICAL ZONE
6. S1 IS A FOUR SECTION SWITCH. SECTIONS A AND B ARE ON A1 BOARD. SECTIONS C AND D ARE ON A3 BOARD.

IC POWER PIN-OUT						
REF DESIG	IC TYPE	+5V	GND	-5V		
U1	RES SIP	-	NONE	-		
U2	RES SIP	-	NONE	-		
U3	4052	16	8	7		
U4	RES PACK	-	NONE	-		
U5	TL072	8	-	4		
U6	4051	16	8	7		
U7	4053	16	8	7		
U8	TL084	4	-	11		
U9	TL084	4	-	11		
U10	7531	16	-	-		
U11	TL082	8	NONE	4		
U12	RES SIP	-	NONE	-		
U13	TL084	4	-	11		
U14	RES SIP	-	NONE	-		
U15	TL084	4	-	11		
U16	4053	16	8	7		
U18	TL084	4	-	11		
U19	TL082	4	-	11		



SPARE



QTY	QTY	QTY	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST							
DO NOT SCALE DWG. ALL THREADS UNFINISHED. FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED. TO BE CLASS 2B INTERNAL THREADS TO BE CLASS 2B AFTER FINISH UNLESS OTHERWISE SPECIFIED. FINISH: —							
TOLERANCE UNLESS SPECIFIED BASIC TWO THREE PLACE PLACE UP TO 6 $\pm .005$ 6 TO 24 $\pm .01$ 25 TO 48 $\pm .015$ 49 TO 120 $\pm .02$ 121 TO 240 $\pm .03$ 241 TO 480 $\pm .04$ 481 TO 960 $\pm .05$ 961 TO 1920 $\pm .06$ 1921 TO 3840 $\pm .08$ 3841 TO 7680 $\pm .10$ 7681 TO 15360 $\pm .12$ 15361 TO 30720 $\pm .15$ 30721 TO 61440 $\pm .20$ 61441 TO 122880 $\pm .25$ 122881 TO 245760 $\pm .30$ 245761 TO 491520 $\pm .40$ 491521 TO 983040 $\pm .50$ 983041 TO 1966080 $\pm .60$ 1966081 TO 3932160 $\pm .75$ 3932161 TO 7864320 $\pm .90$ 7864321 TO 15728640 ± 1.00 15728641 TO 31457280 ± 1.25 31457281 TO 62914560 ± 1.50 62914561 TO 125829120 ± 1.75 125829121 TO 251658240 ± 2.00 251658241 TO 503316480 ± 2.50 503316481 TO 1006632960 ± 3.00 1006632961 TO 2013265920 ± 3.50 2013265921 TO 4026531840 ± 4.00 4026531841 TO 8053063680 ± 4.50 8053063681 TO 16106127360 ± 5.00 16106127361 TO 32212254720 ± 5.50 32212254721 TO 64424509440 ± 6.00 64424509441 TO 128849018880 ± 6.50 128849018881 TO 257698037760 ± 7.00 257698037761 TO 515396075520 ± 7.50 515396075521 TO 1030792151040 ± 8.00 1030792151041 TO 2061584302080 ± 8.50 2061584302081 TO 4123168604160 ± 9.00 4123168604161 TO 8246337208320 ± 9.50 8246337208321 TO 16492674416640 ± 10.00 16492674416641 TO 32985348833280 ± 10.50 32985348833281 TO 65970697666560 ± 11.00 65970697666561 TO 131941395333120 ± 11.50 131941395333121 TO 263882790666240 ± 12.00 263882790666241 TO 527765581332480 ± 12.50 527765581332481 TO 1055531162664960 ± 13.00 1055531162664961 TO 2111062325329920 ± 13.50 2111062325329921 TO 4222124650659840 ± 14.00 4222124650659841 TO 8444249301319680 ± 14.50 8444249301319681 TO 16888498602639360 ± 15.00 16888498602639361 TO 33776997205278720 ± 15.50 33776997205278721 TO 67553994410557440 ± 16.00 67553994410557441 TO 135107988821114880 ± 16.50 135107988821114881 TO 270215977642229760 ± 17.00 270215977642229761 TO 540431955284459520 ± 17.50 540431955284459521 TO 1080863910568919040 ± 18.00 1080863910568919041 TO 2161727821137838080 ± 18.50 2161727821137838081 TO 4323455642275676160 ± 19.00 4323455642275676161 TO 8646911284551352320 ± 19.50 8646911284551352321 TO 17293822569102704640 ± 20.00 17293822569102704641 TO 34587645138205409280 ± 20.50 34587645138205409281 TO 69175290276410818560 ± 21.00 69175290276410818561 TO 138350580552821637120 ± 21.50 138350580552821637121 TO 276701161105643274240 ± 22.00 276701161105643274241 TO 553402322211286548480 ± 22.50 553402322211286548481 TO 1106804644422573096960 ± 23.00 1106804644422573096961 TO 2213609288845146193920 ± 23.50 2213609288845146193921 TO 4427218577690292387840 ± 24.00 4427218577690292387841 TO 8854437155380584775680 ± 24.50 8854437155380584775681 TO 17708874310761169551360 ± 25.00 17708874310761169551361 TO 35417748621522339102720 ± 25.50 35417748621522339102721 TO 70835497243044678205440 ± 26.00 70835497243044678205441 TO 141670994486089356410880 ± 26.50 141670994486089356410881 TO 283341988972178712821760 ± 27.00 283341988972178712821761 TO 566683977944357425643520 ± 27.50 566683977944357425643521 TO 1133367955888714851287040 ± 28.00 1133367955888714851287041 TO 2266735911777429702574080 ± 28.50 2266735911777429702574081 TO 4533471823554859405148160 ± 29.00 4533471823554859405148161 TO 9066943647109718810296320 ± 29.50 9066943647109718810296321 TO 18133887294219437620592640 ± 30.00 18133887294219437620592641 TO 36267774588438875241185280 ± 30.50 36267774588438875241185281 TO 72535549176877750482370560 ± 31.00 72535549176877750482370561 TO 145071098353755500964741120 ± 31.50 145071098353755500964741121 TO 290142196707511001929482240 ± 32.00 290142196707511001929482241 TO 580284393415022003858964480 ± 32.50 580284393415022003858964481 TO 1160568786830044007717928960 ± 33.00 1160568786830044007717928961 TO 2321137573660088015435857920 ± 33.50 2321137573660088015435857921 TO 4642275147320176030871715840 ± 34.00 4642275147320176030871715841 TO 9284550294640352061743431680 ± 34.50 9284550294640352061743431681 TO 18569100589280704124866863360 ± 35.00 18569100589280704124866863361 TO 37138201178561408249733726720 ± 35.50 37138201178561408249733726721 TO 74276402357122816499467453440 ± 36.00 74276402357122816499467453441 TO 148552804714245632998944906880 ± 36.50 148552804714245632998944906881 TO 297105609428491265997889813760 ± 37.00 297105609428491265997889813761 TO 594211218856982531995779627520 ± 37.50 594211218856982531995779627521 TO 1188422437713965063991559255040 ± 38.00 1188422437713965063991559255041 TO 2376844875427930127983118510080 ± 38.50 2376844875427930127983118510081 TO 4753689750855860255966237020160 ± 39.00 4753689750855860255966237020161 TO 9507379501711720511932474040320 ± 39.50 9507379501711720511932474040321 TO 19014759003423441023864948080640 ± 40.00 19014759003423441023864948080641 TO 38029518006846882047729896161280 ± 40.50 38029518006846882047729896161281 TO 76059036013693764095459792322560 ± 41.00 76059036013693764095459792322561 TO 152118072027387528190919584645120 ± 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267608942382367477718334515880864147633602561 TO 535217884764734955436669031761728295267205120 ± 64.00 535217884764734955436669031761728295267205121 TO 10704357695294699108733380635234565905344010240 ± 64.50 10704357695294699108733380635234565905344010241 TO 21408715390589398217466761270469131810688020480 ± 65.00 21408715390589398217466761270469131810688020481 TO 42817430781178796434933522540938263621376040960 ± 65.50 42817430781178796434933522540938263621376040961 TO 85634861562357592869867045081876527242752081920 ± 66.00 85634861562357592869867045081876527242752081921 TO 171269723124715185739734090163753054485504163840 ± 66.50 1712697231247151857							

Parts List for 808C, A3 Board

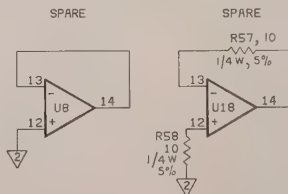
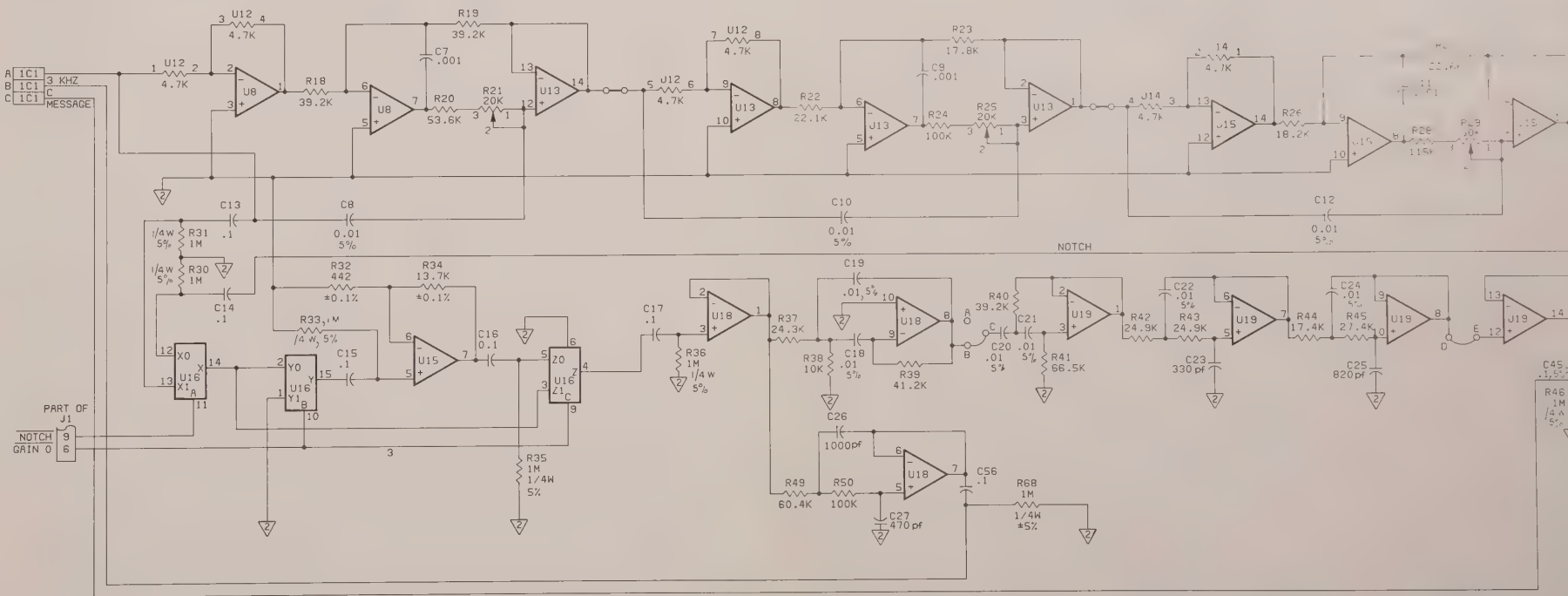
REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 1	Signal Board for 808C	A03434602
C 01	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 02	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 03	Capacitor 1000 pF 2% 100V dipped mica	901930102
C 04	Capacitor 470 pF 2% 500V dipped mica	901920471
C 06	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 07	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 08	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 09	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 10	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 11	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 12	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 13	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 16	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 17	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 18	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 19	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 20	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 21	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 22	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 23	Capacitor 330 pF 1% 50V NPO ceramic	901330331
C 24	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 25	Capacitor 820 pF 1% 50V NPO ceramic	901330821
C 26	Capacitor 1000 pF 2% 100V dipped mica	901930102
C 27	Capacitor 470 pF 2% 500V dipped mica	901920471
C 28	Capacitor 1.0 uF 5% 200V metallized polycarbonate	903120105
C 29	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 30	Capacitor 390 uF 20% 15V tantalum	902700397
C 31	Capacitor 390 uF 20% 15V tantalum	902700397
C 32	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 33	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 36	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 38	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 39	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 40	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 41	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 42	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 44	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 45	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 50	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 51	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 52	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

Parts List for 808C,

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
C 53	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 54	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 55	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 56	Capacitor 0.1 uF 20% 50V ceramic	901300104
CR 01	Diode 1N4148 silicon	910504148
CR 02	Diode 1N4148 silicon	910504148
J 01	16-pin strip socket	914200108
J 02	11-pin strip socket	914200087
R 01	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 02	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 03	Resistor 1.0k Ohm 1% 1/8W metal film	907301001
R 05	Resistor 18.2k Ohm 1% 1/8W metal film	907301822
R 06	Resistor 29.4k Ohm 1% 1/8W metal film	907302942
R 07	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 08	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 10	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 12	Resistor 102k Ohm 1% 1/8W metal film	907301023
R 13	Resistor 24.9 Ohm 1% 1/8W metal film	907324R90
R 14	Resistor 1.0k Ohm 1% 1/8W metal film	907301001
R 15	Resistor 11.0k Ohm 1% 1/8W metal film	907301102
R 16	Potentiometer 2k Ohm cermet Spectrol 64x202	907920202
R 17	Resistor 910 Ohm 5% 1/W composition	906900911
R 18	Resistor 39.2k Ohm 1% 1/8W metal film	907303922
R 19	Resistor 39.2k Ohm 1% 1/8W metal film	907303922
R 20	Resistor 53.6k Ohm 1% 1/8W metal film	907305362
R 21	Potentiometer 20k Ohm cermet Beckman 68XR20K	907930203
R 22	Resistor 22.1k Ohm 1% 1/8W metal film	907302212
R 23	Resistor 17.8k Ohm 1% 1/8W metal film	907301782
R 24	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 25	Potentiometer 20k Ohm cermet Beckman 68XR20K	907930203
R 26	Resistor 18.2k Ohm 1% 1/8W metal film	907301822
R 27	Resistor 22.6k Ohm 1% 1/8W metal film	907302262
R 28	Resistor 115k Ohm 1% 1/8W metal film	907301153
R 29	Potentiometer 50k Ohm cermet Beckman 66XR50K	907930503
R 30	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 31	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 32	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 33	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 34	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 35	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 36	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 37	Resistor 24.3k Ohm 1% 1/8W metal film	907302432
R 38	Resistor 10k Ohm 1% 1/8W metal film	907301002
R 39	Resistor 41.2k Ohm 1% 1/8W metal film	907304122

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.



QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST							
ALL THREADS UNFINISHED EXTERNAL THREADS TO BE CLASS AN, INTERNAL THREADS TO BE CLASS BN, AFTER FINISH UNLESS OTHERWISE SPECIFIED.				DO NOT SCALE DWG. DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED.			
TOLERANCE UNLESS SPECIFIED:				DATE 12/1/81			
BASIC TWO PLACE				SIZE DRAWING NO.			
UP TO 6 ± .02				D03434300			
6 TO 30 ± .03				REV. 2 OF 2			
ABOVE 30 ± .04				SCALE			
ANGULAR DIMENSION ±				STOCK AS			
FINISH:				APPR			
REF 808C				NEXT ASSY. MODEL NO.			
ASSY OR PART				APPLICATION			

Sierra CODE IDENT. NO. 54778
A DIVISION OF LEAR SIEGLER, INC.
MENLO PARK, CALIFORNIA 94025

SCHEMATIC DIAGRAM
A3
SIGNAL BOARD

DATE 12/1/81
SIZE DRAWING NO.
D03434300
REV. 2 OF 2

Parts List for 808C, A3 Board

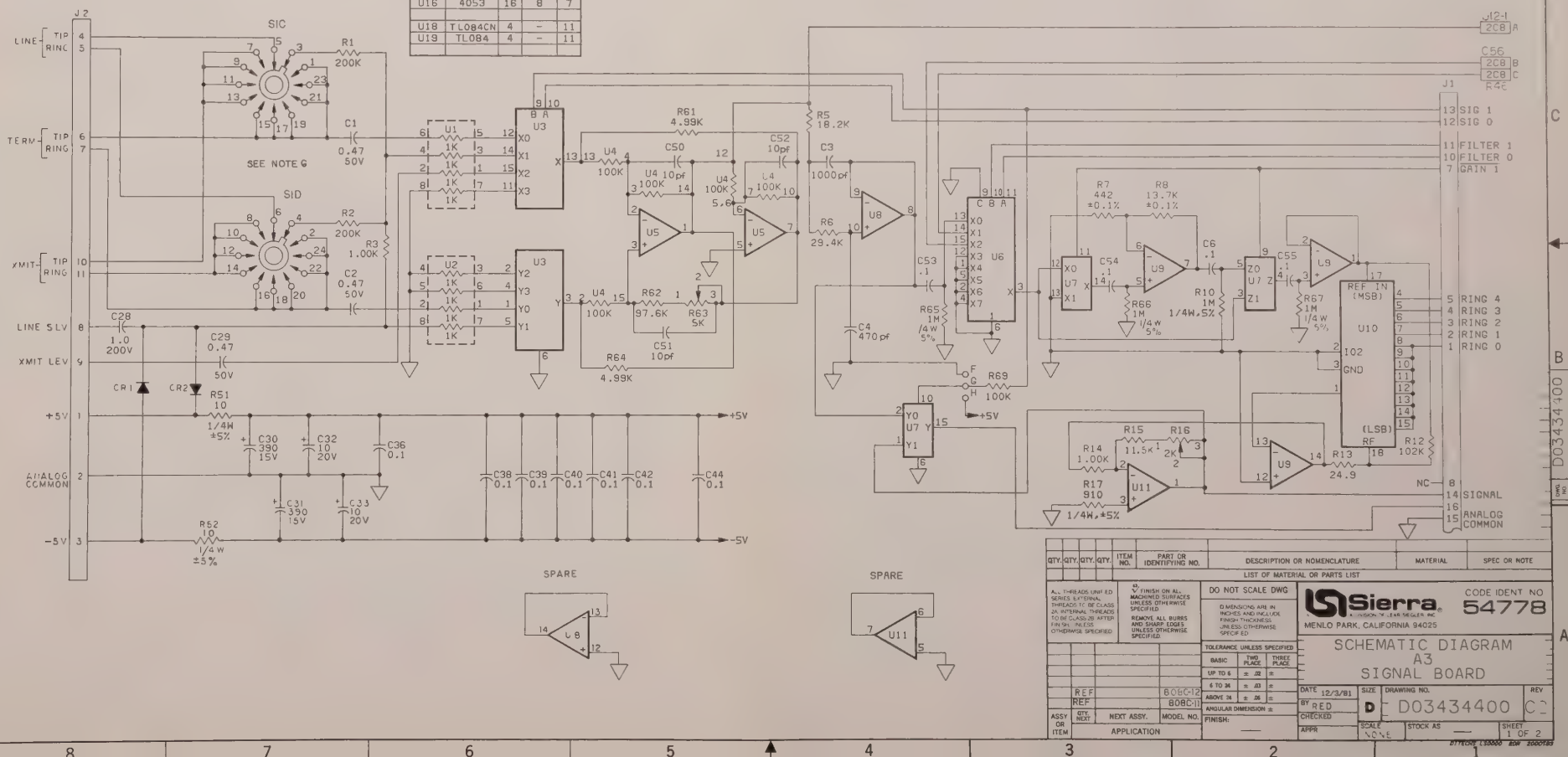
REF DESIG	DESCRIPTION	SIERRA PART NUMBER
R 40	Resistor 39.2k Ohm 1% 1/8W metal film	907303922
R 41	Resistor 66.5k Ohm 1% 1/8W metal film	907306652
R 42	Resistor 24.9k Ohm 1% 1/8W metal film	907302492
R 43	Resistor 24.9k Ohm 1% 1/8W metal film	907302492
R 44	Resistor 17.4k Ohm 1% 1/8W metal film	907301742
R 45	Resistor 27.4k Ohm 1% 1/8W metal film	907302742
R 46	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 49	Resistor 60.4k Ohm 1% 1/8W metal film	907306042
R 50	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 51	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 52	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 57	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 58	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 61	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 62	Resistor 97.6k Ohm 1% 1/8W metal film	907309762
R 63	Potentiometer 5k Ohm cermet Beckman 66XR5K	907930502
R 64	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 65	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 66	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 67	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 68	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 69	Resistor 100k Ohm 1% 1/8W metal film	907301003
S 01	Switch 12-pos 2-pole rotary (used with S1 on A1 board)	911210289
U 01	Isolated resistor network 1k Ohm 2% 1/8W	920880102
U 02	Isolated resistor network 1k Ohm 2% 1.8W	920880102
U 03	IC 4052B CMOS	920204052
U 04	Isolated resistor network 100k Ohm 1% 1/8W	920816104
U 05	IC TL072 JFET op amp	920210072
U 06	IC 4051B CMOS	920204051
U 07	IC 4053B CMOS	920204053
U 08	IC TL084 JFET op amp	920210084
U 09	IC TL084A JFET op amp	920220084
U 10	IC 7531K CMOS	920207531
U 11	IC TL082A JFET op amp	920220082
U 12	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 13	IC TL084 JFET op amp	920210084
U 14	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 15	IC TL084A JFET op amp	920220084
U 16	IC 4053B CMOS	920204053
U 18	IC TL084 JFET op amp	920210084
U 19	IC TL084 JFET op amp	920210084

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1. ALL RESISTANCE VALUES ARE IN OHMS.
2. ALL RESISTORS ARE 1/8W, $\pm 1\%$.
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL DIODES ARE IN 4148
5.  INDICATES SHEET NUMBER

6. S1 IS A FOUR SECTION SWITCH.
SECTIONS A AND B ARE ON A1 BOARD.
SECTIONS C AND D ARE ON A3 BOARD.

IC POWER PIN-OUT				
REF DESIG	IC TYPE	+5V	GND	-5V
U1			— NONE —	
U2			— NONE —	
U3	4052	16	8	7
U4			— NONE —	
U5	TL072	8	—	4
U6	4051	16	8	7
U7	4053	16	8	7
U8	TL084CN	4	—	11
U9	TL084CN	4	—	11
U10	7531	16	—	—
U11	TL082A	8	— NONE —	4
U12			— NONE —	
U13	TL084CN	4	— NONE —	11
U14			— NONE —	
U15	TL084CN	4	—	11
U16	4053	16	8	7
U18	TL084CN	4	—	11
U19	TL084	4	—	11



Parts List for 808C-11,-12, A3 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 1	Signal Board for 808C-11 & 808C-12	A03434601
C 01	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 02	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 03	Capacitor 100 pF 2% 100V dipped mica	901930102
C 04	Capacitor 470 pF 2% 500V dipped mica	901920471
C 06	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 07	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 08	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 09	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 10	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 11	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 12	Capacitor 0.01 uF 1% 100V ceramic	901430103
C 13	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 16	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 17	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 20	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 21	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 22	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 23	Capacitor 200 pF 2% dipped mica	901910201
C 24	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 25	Capacitor 100 pF 2% 100V dipped mica	901930102
C 26	Capacitor 100 pF 2% 100V dipped mica	901930102
C 27	Capacitor 470 pF 2% 500V dipped mica	901920471
C 28	Capacitor 1.0 uF 5% 200V metalized polycarbonate	903120105
C 29	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 30	Capacitor 390 uF 20% 15V tantalum	902700397
C 31	Capacitor 390 uF 20% 15V tantalum	902700397
C 32	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 33	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 36	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 38	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 39	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 40	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 41	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 42	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 44	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 45	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 46	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 47	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 48	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 49	Capacitor .001 uF 5% 100V NPO ceramic	901900472
C 50	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100

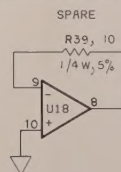
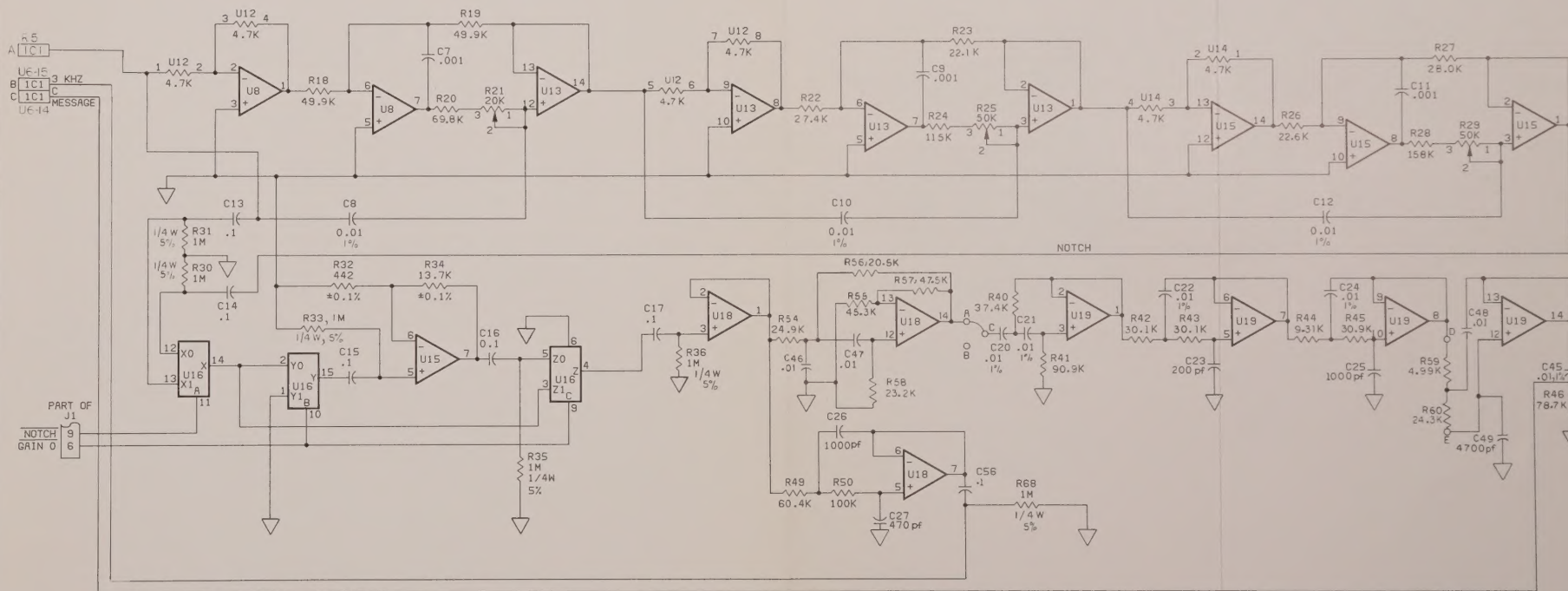
Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

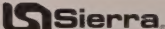
Parts List for 808C-11,-12, A3 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
C 51	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 52	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 53	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 54	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 55	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 56	Capacitor 0.1 uF 20% 50V ceramic	901300104
CR 01	Diode 1N4148 silicon	910504148
CR 02	Diode 1N4148 silicon	910504148
J 01	16-pin strip socket	914200108
J 02	11-pin strip socket	914200087
R 01	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 02	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 03	Resistor 1k Ohm 1% 1/8W metal film	907301001
R 05	Resistor 18.2k Ohm 1% 1/8W metal film	907301822
R 06	Resistor 29.4k Ohm 1% 1/8W metal film	907302942
R 07	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 08	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 10	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 12	Resistor 102k Ohm 1% 1/8W metal film	907301023
R 13	Resistor 24.9 Ohm 1% 1/8W metal film	907324R90
R 14	Resistor 1k Ohm 1% 1/8W metal film	907301001
R 15	Resistor 11.5k Ohm 1% 1/8W metal film	907301152
R 16	Potentiometer 2k Ohm cermet Spectrol 64x202	907920202
R 17	Resistor 910 Ohm 5% 1/4W composition	906900911
R 18	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 19	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 20	Resistor 69.8k Ohm 1% 1/8W metal film	907306982
R 21	Potentiometer 20k Ohm cermet Beckman 68XR20K	907930203
R 22	Resistor 27.4k Ohm 1% 1/8W metal film	907302742
R 23	Resistor 22.1k Ohm 1% 1/8W metal film	907302212
R 24	Resistor 115k Ohm 1% 1/8W metal film	907301153
R 25	Potentiometer 50k Ohm cermet Beckman 66XR50K	907930503
R 26	Resistor 22.6k Ohm 1% 1/8W metal film	907302262
R 27	Resistor 28.0k Ohm 1% 1/8W metal film	907302802
R 28	Resistor 158k Ohm 1% 1/8W metal film	907301583
R 29	Potentiometer 50k Ohm cermet Beckman 66XR50K	907930503
R 30	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 31	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 32	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 33	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 34	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 35	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 36	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 39	Resistor 10.0 Ohm 5% 1/4V composition	906900100
R 40	Resistor 37.4k Ohm 1% 1/8W metal film	907303742

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	-	SEE SHEET 1		



QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNLESS OTHERWISE SPECIFIED.		✓ FINISH ON ALL MACHINING SURFACES UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DWG.		 CODE IDENT. NO. 54778 A DIVISION OF LEAD DEALER, INC. MENLO PARK, CALIFORNIA 94025		
3A. INTERNAL THREADS TO BE CLASS 3B. AFTER FINISH UNLESS OTHERWISE SPECIFIED.		REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.		DIMENSIONS ARE IN INCHES AND INCLUDE FINER THICKNESS UNLESS OTHERWISE SPECIFIED.		SCHEMATIC DIAGRAM A3 SIGNAL BOARD		
TOLERANCE UNLESS SPECIFIED:		TWO PLACES THREE PLACES		DATE 12/1/81		SIZE DRAWING NO.		REV.
REF		B08C12		UP TO & .005		BY R E D		D
REF		B08C11		.5 TO .01 .005		D		00343400
ASY. OR ITEM		QTY. ITEM		NEXT ASSY. MODEL NO.		CHECKED		C2
APPLICATION		SCALE 2:1		APPR		STOCK AS		SHEET 1 OF 1

Parts List for 808C-11,-12, A3 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
R 41	Resistor 90.9k Ohm 1% 1/8W metal film	907309092
R 42	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 43	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 44	Resistor 9.31k Ohm 1% 1/8W metal film	907309311
R 45	Resistor 30.9k Ohm 1% 1/8W metal film	907303092
R 46	Resistor 78.7k Ohm 1% 1/8W metal film	907307872
R 49	Resistor 60.4k Ohm 1% 1/8W metal film	907306042
R 50	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 51	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 52	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 54	Resistor 24.9k Ohm 1% 1/8W metal film	907302492
R 55	Resistor 45.3k Ohm 1% 1/8W metal film	907304532
R 56	Resistor 20.5 Ohm 1% 1/8W metal film	907302052
R 57	Resistor 47.5k Ohm 1% 1/8W metal film	907304752
R 58	Resistor 23.2k Ohm 1% 1/8W metal film	907302322
R 59	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 60	Resistor 24.3k Ohm 1% 1/8W metal film	907302432
R 61	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 62	Resistor 97.6k Ohm 1% 1/8W metal film	907309762
R 63	Potentiometer 5k Ohm cermet Beckman 66XR5K	907930502
R 64	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 65	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 66	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 67	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 68	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 69	Resistor 100k Ohm 1% 1/8W metal film	907301003
S 01	Switch 12-pos 2-pole rotary (used with S1 on A1 board)	911210289
U 01	Isolated resistor network 1k Ohm 2% 1/8W	920880102
U 02	Isolated resistor network 1k Ohm 2% 1/8W	920880102
U 03	IC 4052B CMOS	920204052
U 04	Isolated resistor network 100k Ohm 1% 1/8W	920816104
U 05	IC TL072 JFET op amp	920210072
U 06	IC 4051B CMOS	920204051
U 07	IC 4053B CMOS	920204053
U 08	IC TL084 JFET op amp	920210084
U 09	IC TL084A JFET op amp	920220084
U 10	IC 7531K CMOS	920207531
U 11	IC TL082A JFET op amp	920220082
U 12	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 13	IC TL084 JFET op amp	920210084
U 14	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 15	IC TL084A JFET op amp	920220084
U 16	IC 4053B CMOS	920204053
U 18	IC TL084 JFET op amp	920210084
U 19	IC TL084 JFET op amp	920210084

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.



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SIERRA ELECTRONIC DIVISION
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TWX 910-373-1282

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